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WHMD HOME PAGE:
http://www.michigan.gov/deq

Transmittal

TO: Carolyn Bury
Project Manager
U.S. Environmental Protection Agency
Remediation and Re-use Branch
Corrective Action Section 2 - LU9J
77 W. Jackson Blvd.
Chicago, IL 60604

We are pleased to send you the enclosed material. Please contact us if we can be of further assistance.

FROM:

Al Taylor

OFFICE OF WASTE MANAGEMENT AND RADIOLOGICAL PROTECTION

MI DEPARTMENT OF ENVIRONMENTAL QUALITY
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Phone:

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Additional Comments:

Carolyn,
Thanks again for your help last week on the Dow/OxyChem Ludington project – MID 006016 919. As we discussed, attached is a copy of the DEQ file for your records. Please send a copy of the EPA file to address above.

Thanks again!
Al

Dow / OxyChem Ludington Meeting

4/21/14

Steve Lucas
Gordy Colvin — 201 site, working w/ RRD out of Cadillac
Gary Dyke — NPDES permitted
Danny Haggard — Background on lagoons, closure options
Nick Moore — Regulatory status of South Pond
Bruce Heer, WD — Gary Dyke working on project since late 90s
Jim Staley — Revitalization project
Phil Pogorsky — Salt production since 1880s
Al Taylor — 180 acre site
Chuck Howe — Magnesium hydroxide produced in early 40s Defense Dept
Dow retained liabilities 7/09 upon sale to OxyChem

AT - Does agreement cover CA?

SL - Yes, except for future releases. Ordinarily, Mike Ryder would be at meetings on South Pond. He's off work today.

GD - Lime lagoon area - some lands inactive
South Pond ~100 acres; built upon floodplain / wetland areas. Built ~1962, 2 cells 1972; 5 cells 1981
1980s West cell filled / inactive; 1982 ag lime mixing
1998 - East cell inactive; center cell inactive.

Total Volume in South Pond 1,746,961 yd^3
CaCl$_2$ production only now
Dow employees stayed on at the time of the sale to OxyChem
Mined lime went to lagoon area for drying. Capped ~15 yrs. Still some solids settling but not as much.
SL - Not much market for ag lime.

Cooling/Testing Ponds still in use → pH reduction, heat loss, ammonia volatilization, settling of solids.
AT - What is ammonia from? CaO2 process

Solids characterized historically. Cores collected 1997
General site characterization in 1990s/2000s
Exfiltration Study under NPDES permit
Geotech/agronomic samples recently
Dolerite/flyash deeper in cores
from on site power plant; gone many years

Regulatory Status
Facility under Part 201
1986-1988 - Elevated chlorides 26 MWs
1996-1997 SW sampling, 5 CPTs, pore water studies
2004-2008 CPTs, pore water studies
Bill Bosley, now John Vanderhoof
Chloride > FAV 1300 for 1y comprehensive work plan
Remediation system = 10 wells, gradient reversal
~~Water discharged under NPDES permit~~
GW contained system since 2010
2013 work on Dow retained property. Looking at groups
transfers
SC No mixing zone - not allowed here to be > FAV
Will want a MZ when they get below FAV after removal. Will take a while.
Dow conservation-based vision

Small gas plant, not a mfd gas plant. Sketchy info.
1/2 acre
Small LF - 1970s ~ 1/acre bare material
300 acres undeveloped area - Dow employee park
Some changed now from plant site and Butler & Peters Salt works. Brine in upper aquifer. Couple orphan salt wells - DEQ looking at closure
Arsenic - high bkgd.
Cover installed on brine hydrosea 2009
SL - 300 acres - looking at big ecological preservation - would like to sell to others. Currently is fenced.

South Pond & Equilibration Study
NPDES permit is up for renewal
Study reqd. under existing permit. Three phases of evaluation. Dow had had the lead. Big transferred to Oxychem.
SL - Amnesty type program → worked w/state to find out whether looking at GW or SW. Determine if GW discharge permit was needed
JH - Agree that was a good summary.
GD - Working w/ EWRD 2008 - 2012
Conceptual model. Determined there is exfiltration ~270 gpm losses. Last study to understand where it goes → lake & river.
Question is whether the river serves as hydraulic barrier

Aquitard near lake; Cl goes deeper between aquitard & river.

DH - Can't tell where different contaminants are coming from "monitorable unit" in LF zone

GD - Mass balance - most is from current operations. closed cells. Higher flow in 2008 than now.
~1/2 goes out the bottom
OxyChem has requested that exfiltrating GW be excluded under the NPDES permit.

AT - Does the exfiltrating GW meet the FAV?
Not for Cl, but for ammonia

SL - Ammonia needs to be considered. Not sure it is all going to PM Lake. It is an open issue.

GD - Long-Term Management Plan
Cover exposed solids in flood manner when no longer needed

AT - pH? 9-10

GD OxyChem now done w/ South & Central ponds

DH - Contiguous nature - ecological value

GD - Pilot studies for South Pond vegetative cover

NM - Improve aesthetics, etc.
Found that a liner was needed due to hydrogeologic nature of solids. Both spread out & don't want liner/Cl layer. Not much pore space (toothpaste analogy) Hard to figure out how much depth was needed to get plant growth.
6" sand w 6" topsoil

AT - Expelling barrier

Wetland species dont work. Prairie grasses did.
Drought tolerant shrubs also.
West Cell Project - constructed 2013
Worked w/ Ducks Unlimited
Project granted to DEQ Cadillac in 2012
10 acres - additional planting 2014
Benefits - Eliminate DC, reduce sediment,
improves aesthetics
6" sand 12" topsoil hybrid areas
Seasonal Wetland areas - PVC liner w/12" topsoil
8 areas 1.2 acres total
Higher mounds w/ woodies planting in May 2014
Used fence posts to add topography

6) Conservation focused land revitalization
Stakeholder groups saw South Pond as important
linkage to 300 acre sea of other area
Getting more interest - want a formal determination
Want to incorporate South Pond into project area
PM River is of interest to many. They want 300 acre
parcel for conservation use
Third branch of PM River - culvert plugged in 80's
Restore flow to get channel to go back into PM Lake
Existing trap park - Settlers Landing
Dow Beach access; adjacent State game area
Multiuse trail area connecting Baldwinville Brunswick
to Luzerne. Pedestal is also a stakeholder - OK w/ path
around South Pond

Approach / Milestones
Res Plan Preparation - PMCT (Township)
Property transfer between Dow & Cty
Stakeholders Summit May 5/14
MNRTF Grant Preparation Q3/Q4 2014
Env. Site Assessment Plan - Summer 2014
DEQ endorsement of ESA Plan Q4 2014
MNRTF Grant Application 4/1/15 - work back from this date
Due Care Plan 10/1/15

East/Secondary Cell Cover - similar approaches West Cell
Work DEQ endorsement of approach
Consistent design, but more wetland pockets (larger wetland areas)
AT - Comfortable w/ design based on 2 layer experience
NM - Pilot work since 2008
3x as large; improvements to perimeter dikes
Secondary cell is 10-12' lower than East Cell
Schedule
Spring 2014 earthwork, complete plantings fall 2014/Spring 2015
SL - South Pond remains in use by Dow. Should they exit in future, Dow would complete closure, so we have a master plan for that work

Discussion on Path to Closure
Closure of lagoons under 115, 31

PR - Cell for East Cell is different than cap under 115
Leaching due to permeable cap. Normally for LF
closure → best available treatment technology to
minimize leaching.
West Cell work - done deal, especially if use ceased
before 1993. East Cell has a much longer usage
period. Falls under 1993 115 rules, as do other
cells
AT - Work not fully up to speed. Did EPA do a PA/VSI at
site?
SL - Dow retains CA obligations
Plume under river → 300 case property
AT - We need to ID whether there are any CA obligations
under this timeline.
Are there any WMUs that need priority action?
PR - Need more of a RAP for the site
Concern is impermeable vs permeable cover issue
SL - Capping for other aspects - slope percentage for
final cover
PR - Needs to be drainable so water can't travel
through the waste. Different use with South Pond
still being in use.
OD - Rule 304 restricted impermeable cap on all of eastern
Waste sits beneath the water table.
Understand will have to deal w/ GW
PR - Possibly authorize the discharge under 31
SL - Don't know how to differentiate leachate from active vs inactive

Don't think active alts are an ammonia source
NM - Vegetative cover will cut down infiltration a lot.
PR - Better for nothing but question is whether enhanced percolation is acceptable. Understand from a natural features standpoint that a LF cover is of concern.
SR - Woody species would be problematic.
PR - Resolve the issue of the leakage
GD - Plant has a lot of data on the solids characterization
PR - Being priority ag in WRD.
Was a revetment option considered?
SR - Have looked at sound - can it be permitted?
MZ if not in service has been discussed. How much released historically into reservoir?
JH - 2010 SWAS analysis re: whether current ammonia/chloride levels could be permitted. CL not a problem in SW, but is a problem in GW. Ammonia levels in GW in island exceed allowable permit number in quite a few areas. Appear to be from active discharge. Bayview proposed to remove some ammonia. Dutch + Lake Michigan discharge. Prevented from taking action because the permit wasn't being processed.
SR - Understand the CL issue, need for CA/deed restriction

PR - How to proceed from here? Could have been over more stuff in attendance given the history. We need some internal discussion w/ PWRD, RRD

SL - Got thrown a curve ball wrt 111 CA.
115 solution? WMUs have CA under 111 - not sure if 115 would apply.
Have to deal w/ these issues in order for the conservation project to continue. Have to get it sorted out.
PR - Would like to see the site in May. Will organize more internal discussions. Evaluate feedback.
Discuss changing the ammonia treatment process
Put evaluation rept in revised permit - could have problem of breakthrough of pollutant
TH - Possibly like the detroit portion; lines could eventually become part of the cap.
SL - Oxys not here to provide input.
Seems like the CA may be permissible if ammonia is questionable
Solution may be to treat the ammonia and still likely go down. 201/K issue if > criteria. May alternate.
GD - Don't think the existing solids are the ammonia source.
PR - Leach test on pond solids to determine if hazardous
Which test due to high pH - get Duane Rosakoskey involved. Haven't looked at RRD's files.
AT - Any RRD split sampling?
SL - Don't think so
PR - Will do our internal meeting as soon as we can: 2-3 wks
SL - We can provide more info on the solids characterization
AT - Trend analysis done, i.e., for Cl?
GD - No time series analysis due to ongoing source

(10)

Don would not put in a ROD while the source is still active
Wells only date back 5-6 years as part of exploration study
Flow has decreased from Opp also.
Would it be helpful to schedule a followup meeting in a few weeks?
DR - Schedule a meeting with who? Both
SL - Preferably before Memorial Day

4/3/14 Meeting

Field Investigation Report

Ludington Plant Site Exfiltration Study
Phase III – Field Investigation

Prepared for

The Dow Chemical Company

October 2012

CH2MHILL.

SECTION 1

Introduction

The Occidental Chemical Corporation Plant Site Facility (facility) is located on 183 acres within an industrialized area of Ludington, Michigan, along the north and eastern shore of Pere Marquette Lake (Figure 1). In July 2009, Occidental Chemical Corporation purchased the facility from The Dow Chemical Company (Dow). The sale included the production facilities located on the property, as well as approximately 100 acres of the property located on the eastern end of Pere Marquette Lake occupied by a series of retention ponds known as the South Pond Area. As part of the sale, Dow retained certain obligations relating to the environmental conditions at the Plant Site and South Pond Area.

The South Pond Area is a series of five retention ponds that hold process water delivered from the plant for the primary purpose of solids settling before the water is discharged directly to Pere Marquette Lake under an existing National Pollutant Discharge Elimination System (NPDES) permit. The NPDES permit required verification of the integrity of the lagoon seal or a quantification of the rate of exfiltration and mass loading from the South Pond Area, in order to determine if the mass loading may be incorporated within the current or allowable future NPDES permit limits.

An exfiltration study (Phase I) was conducted in 2008 to address this requirement. The results of the initial phase of the study indicated the ponds were losing more than 500 gallons per minute (gpm) to exfiltration, and the majority of water lost through exfiltration appeared to discharge (vent) to surface water in the Pere Marquette River and Pere Marquette Lake adjacent to the South Pond Area through shallow groundwater.

Additional data were required and additional fieldwork (Phase II) was completed in 2009. The results of the Phase II Field Investigation (FI) indicated that shallow groundwater is migrating downward within the interior of the ponds and radially toward Pere Marquette River and Pere Marquette Lake, deep groundwater is upwelling to the shallow aquifer along the Pere Marquette River, and shallow groundwater is discharging to Pere Marquette Lake and Pere Marquette River.

The Phase III FI of the South Ponds Area was conducted to collect sufficient data to determine whether a significant quantity of exfiltration water from the South Ponds is migrating to areas other than the Pere Marquette River and Lake, and to address data gaps in the understanding of the fate of groundwater affected by exfiltration. All work is being completed in order to meet the requirements of Part I, Section A.2 of NPDES Permit MI0003026, which took effect on January 1, 2008. This report represents an extension of the original 2008 exfiltration study. The work was conducted on behalf of Dow from March to September 2012 in accordance with the requirements of the work plan approved by the Michigan Department of Environmental Quality (MDEQ; CH2M HILL 2012).

SECTION 3

Background

Several investigations have been conducted at the Ludington Plant Site since the mid-1980s. During previous investigations, elevated levels of chlorides and TDS were identified in groundwater beneath the site. During 2006, an FI was conducted at the site and South Ponds Area to assess whether TDS beneath the site at concentrations exceeding MDEQ Part 201, P.A. 451 (Part 201), groundwater-surface water interface (GSI) cleanup criteria (500 milligrams per liter [mg/L]) were ultimately discharging into Pere Marquette Lake. The investigation indicated that elevated concentrations of chlorides and TDS were present in groundwater beneath the perimeter of the South Ponds Area (CH2M HILL 2007). A follow-up pore water FI performed in 2008 showed that there were several offshore areas adjacent to the South Ponds Area for which analytical results indicated that elevated TDS concentrations (above GSI criteria) were venting into Pere Marquette Lake and Pere Marquette River (CH2M HILL 2008).

Process water that enters the South Pond Area's network of ponds is ultimately discharged into Pere Marquette Lake under an NPDES permit. To meet the requirements of the NPDES permit, an exfiltration study was conducted in the South Ponds Area of the OxyChem Ludington Plant Site in August, September, and October 2008. The study looked at the mass loading rate of TDS, chlorides, ammonia, and total Kjeldahl nitrogen (TKN) that may be exfiltrating into shallow groundwater, and the final destination of any exfiltration water. The study concluded that water was exfiltrating from the South Ponds into the shallow groundwater at an average rate of 520 gpm, carrying an average of 3,900 pounds per day of chlorides and 10,200 pounds per day of TDS.

Groundwater grab samples and electrical conductivity (EC) logs collected using cone penetrometer testing (CPT) methods during the initial exfiltration study also indicated that elevated concentrations of TDS, chlorides, and ammonia were present in the deep groundwater in areas where the lake clay aquitard unit was not present, indicating a migration of chloride- and TDS-impacted groundwater into the lower sand aquifer. The CPT soundings also suggested that geologic conditions from the interior of the South Ponds Area varied significantly from those recorded in soundings and borings around the South Ponds Area perimeter. One of the most important differences was the absence or thin nature of the "lake clay" aquitard unit. The lake clay is an important local stratigraphic unit because it has been repeatedly demonstrated to be an effective barrier to vertical chloride plume migration in areas where it has a substantial thickness. The soundings also provided groundwater grab sample and EC logging data that indicated groundwater was impacted to greater depths at the interior of the South Ponds Area, where the lake clay is not present.

CPT soundings performed during the 2006 GSI FI around the perimeter of the South Ponds Area indicated that where the lake clay was present, EC logging results and TDS concentrations in the deep aquifer below the lake clay were below MDEQ GSI criteria (CH2M HILL 2007). However, the overall magnitude and extent of elevated ammonia, chlorides, and TDS in the deep groundwater beneath the South Ponds Area was not known (CH2M HILL 2009a).

Sludge 10-20' thick

1000 x 1500' 34 acres?

500 x 500 West pond

DA Huggard Dow
Gerth Colvin?
Greg Dyke

Referenced 115-25 g mem
Site requested material approval 2005
Fact? 1991 Residuals Mgmt Plan - eg use
Was discontinued

4/3/14 meeting

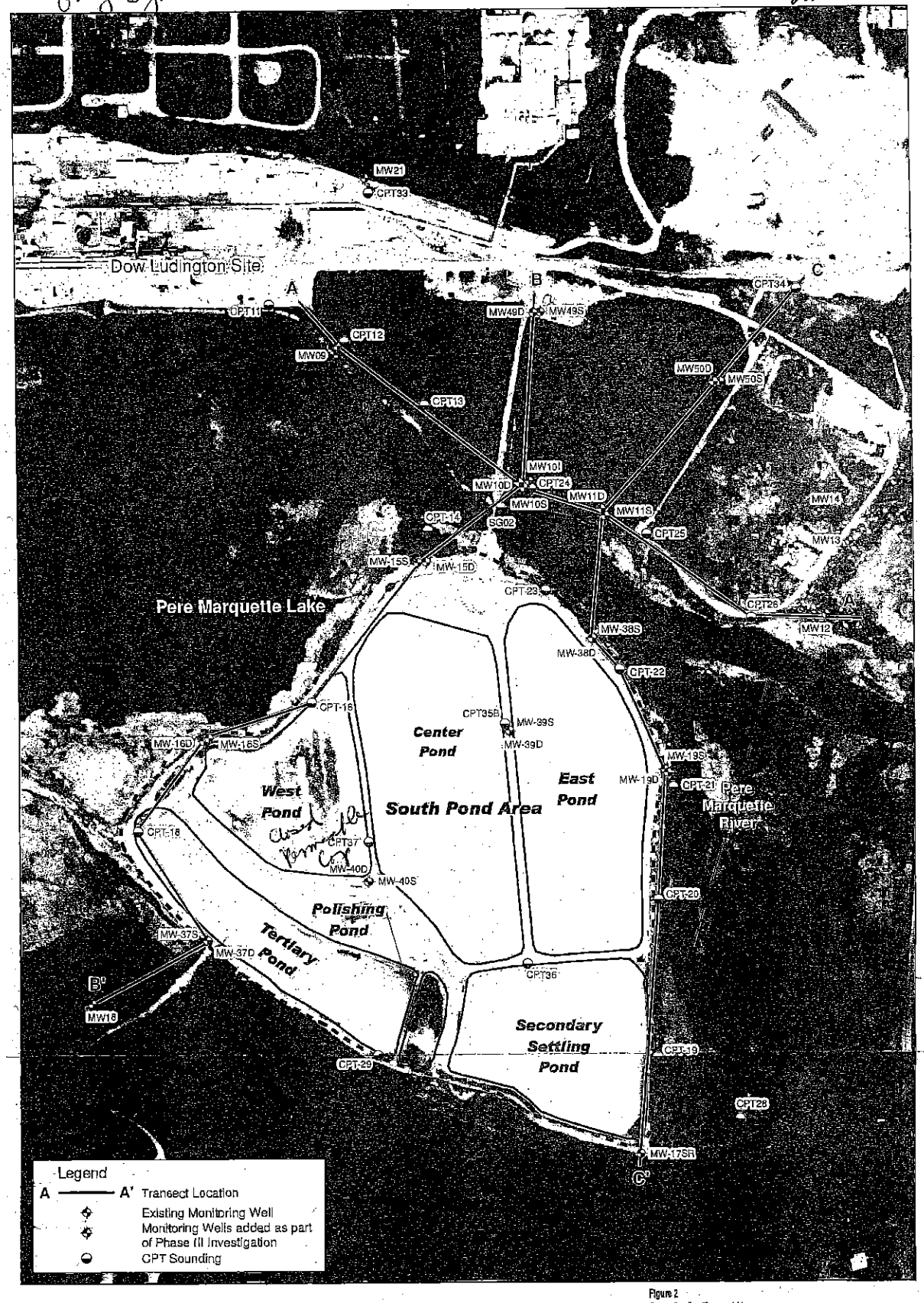


Figure 2
Cross Section Transect Map
Exfiltration Study Phase III Fi Report
Plant Site
The Dow Chemical Company
Ludington, MI

CH2MHILL

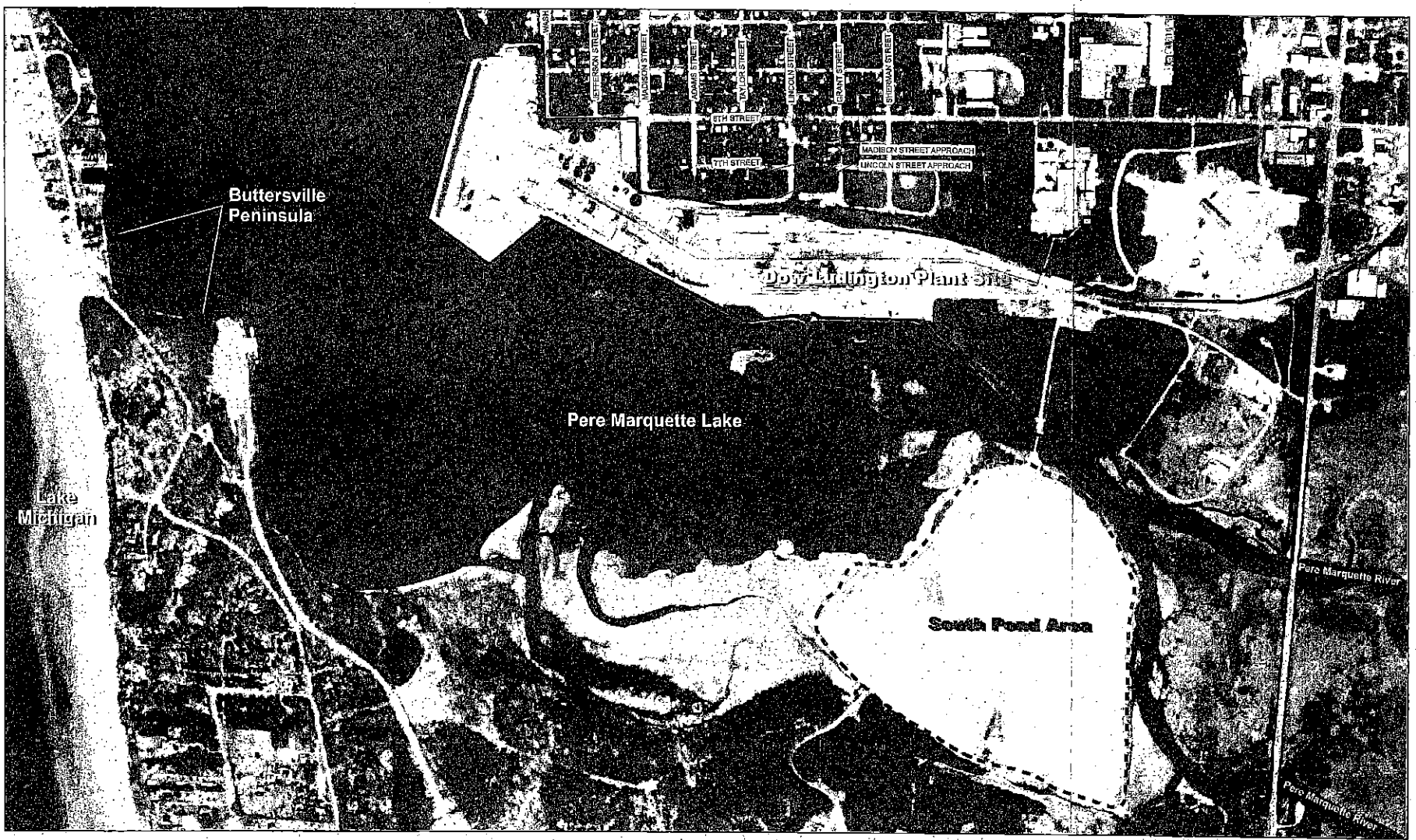


Figure 1
Site Map
Exfiltration Study Phase III FI Report
Plant Site
The Dow Chemical Company
Ludington, MI

CH2MHILL

Ludington Properties
Long Term Management Plan

Ludington, Michigan

March 2014

Meeting Objectives

- Provide an update on:
  - Dow's long term management plan and phased approach for covering inactive portions of South Pond
  - Conservation focused land use project currently under discussion with Pere Marquette Township, the Land Conservancy of West Michigan, The Nature Conservancy, and Occidental Chemical
- Inform MDEQ of environmental evaluation of lands that may be transferred into public ownership as part of the conservation focused land use project

Agenda

- Short review of Ludington site background and history
- Update on conservation-focused land use project
- Update on West Cell cover construction project
- Review of East and Secondary Cell construction planned for 2014
- Environmental conditions of Dow properties

Ludington Site Background

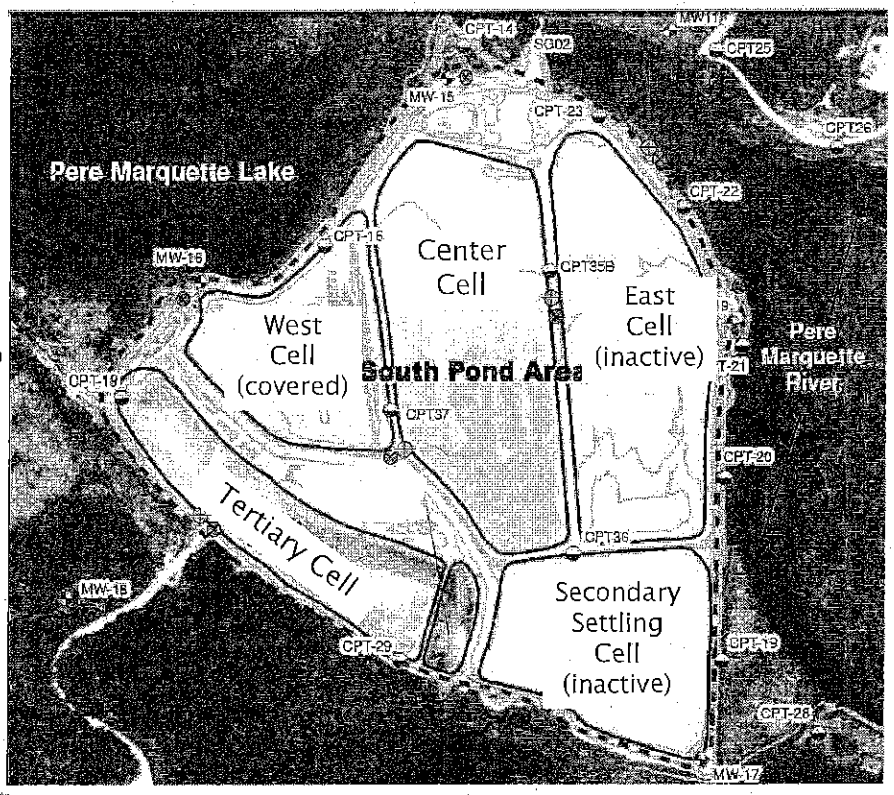
Plant Site History

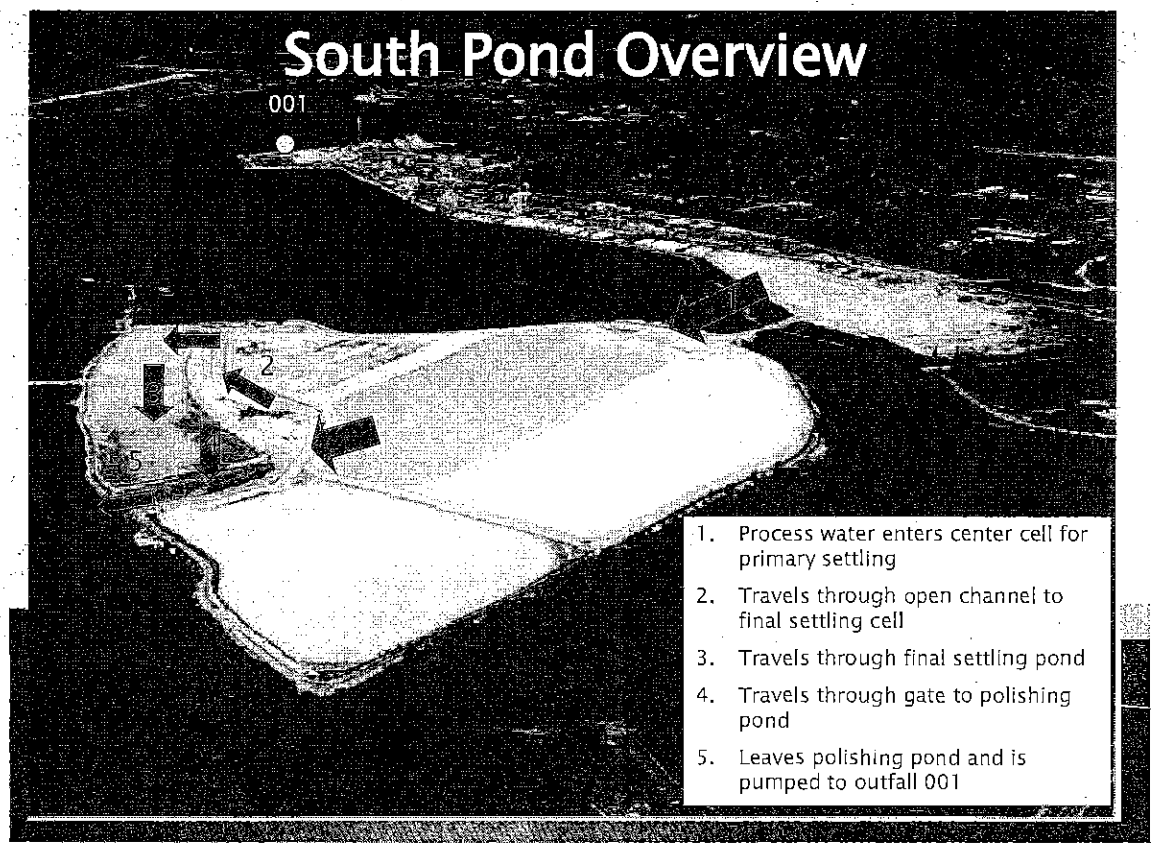
- Dating back to 1880s, the site was occupied by the Lyons Salt Works, the Anchor Salt Company, and the Morton Salt Company
- In the early 1940s, the site was operated for the US Defense Department by the Dow Magnesium Corporation to make magnesium hydroxide
- Dow purchased in 1948 and operated through July 2009, at which time the site was sold to OxyChem, the current owner
- The site is located on 183 acres within an industrialized area of Ludington, Michigan
- The plant remains in operation, manufacturing various grades of calcium chloride salt and calcium chloride solution

South Pond Overview

- South Pond operations began in the 1960's.
- The South Pond is currently comprised of a series of retention cells that hold post-process water for treatment before it is discharged directly to Pere Marquette Lake under a NPDES permit.
- Currently South Pond serves 3 primary functions:
  - Heat loss
  - Ammonia volatilization and reduction
  - Settling of solids

South Pond Features





South Pond Operational Status

- Function of South Pond has changed over time – under previous operations, the pond system accumulated substantial solids that were periodically "mined" from the cells and sold for agricultural uses
- Solids are no longer mined from South Pond
- West Cell is full of solids. In 2013 cell was covered and revegetated with wetland and upland features.
- East Cell is full of solids and is no longer in service. Project planned for 2014 to cover and revegetate.
- Secondary Cell is no longer in service. Project planned for 2014 to cover and revegetate.

Long Term Management Plan

- Dow has developed a long term management plan for the South Pond that consists of the following elements:
  - Cover exposed solids to reduce exposures to the environment in cells that are no longer in service
  - Cover subsequent cells in a phased manner if and when they are no longer needed by OxyChem for post-process water treatment
  - Integrate closure of South Pond complex, should termination of waste water operations occur, into a broader conservation-focused land revitalization effort
  - Consider transferring ownership of rehabilitated cells to public as part of conservation focused land revitalization effort

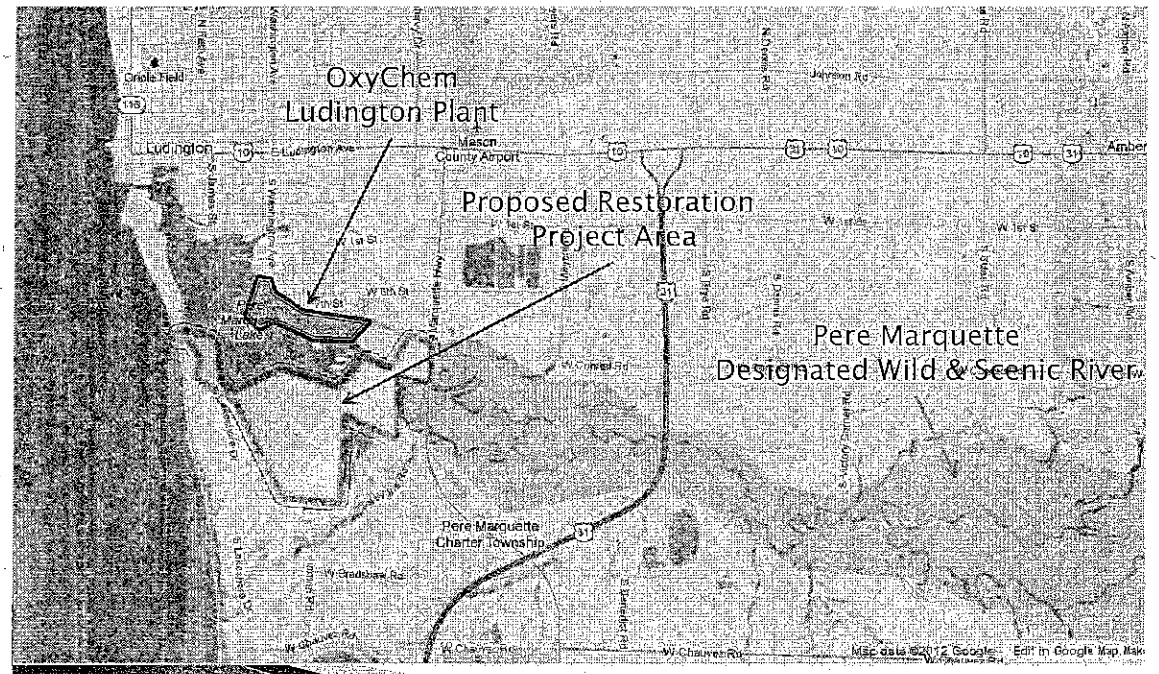
Timeline for South Pond Work

- 2014
  - Complete final design of cover for East and Secondary Cells
  - Complete plantings on West Cell
  - Construct cover for East Cell, Secondary Cell, perimeter dikes and unused areas on north side of South Pond complex
- 2015
  - Complete plantings on East and Secondary Cells
- 2015 and Beyond
  - Possible trail construction around perimeter of ponds to connect conservation lands south of Pere Marquette Lake with those north of Pere Marquette River and Ludington
  - Cover Center and Tertiary Cells when OxyChem terminates operations

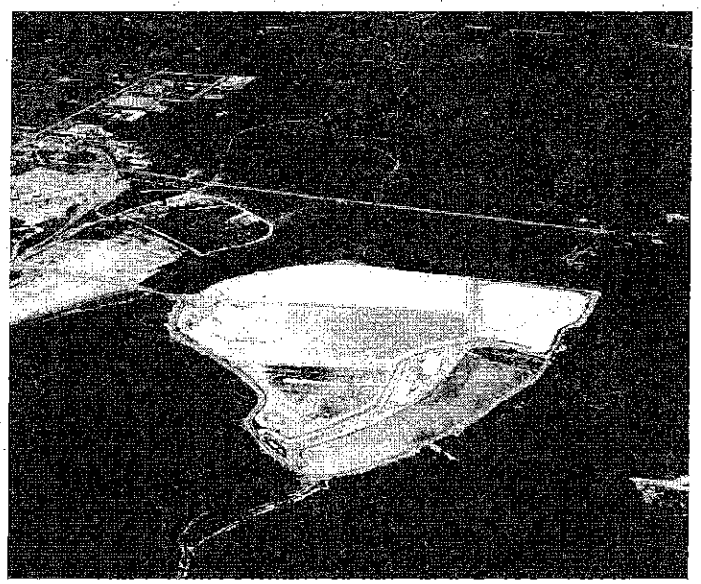
Conceptual Vision for Conservation-Focused Land Revitalization

- Dow has developed a concept for conservation-focused land uses for former industrial and undeveloped lands along Pere Marquette Lake
- This vision anticipates the eventual restoration of the South Pond complex and incorporation into a conservation-focused land use area

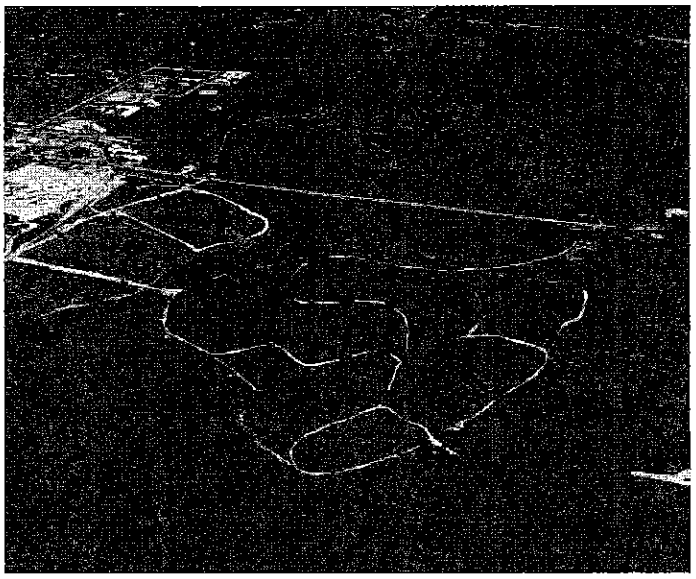
Location of Proposed Project Area



South Pond Aerial View – Before

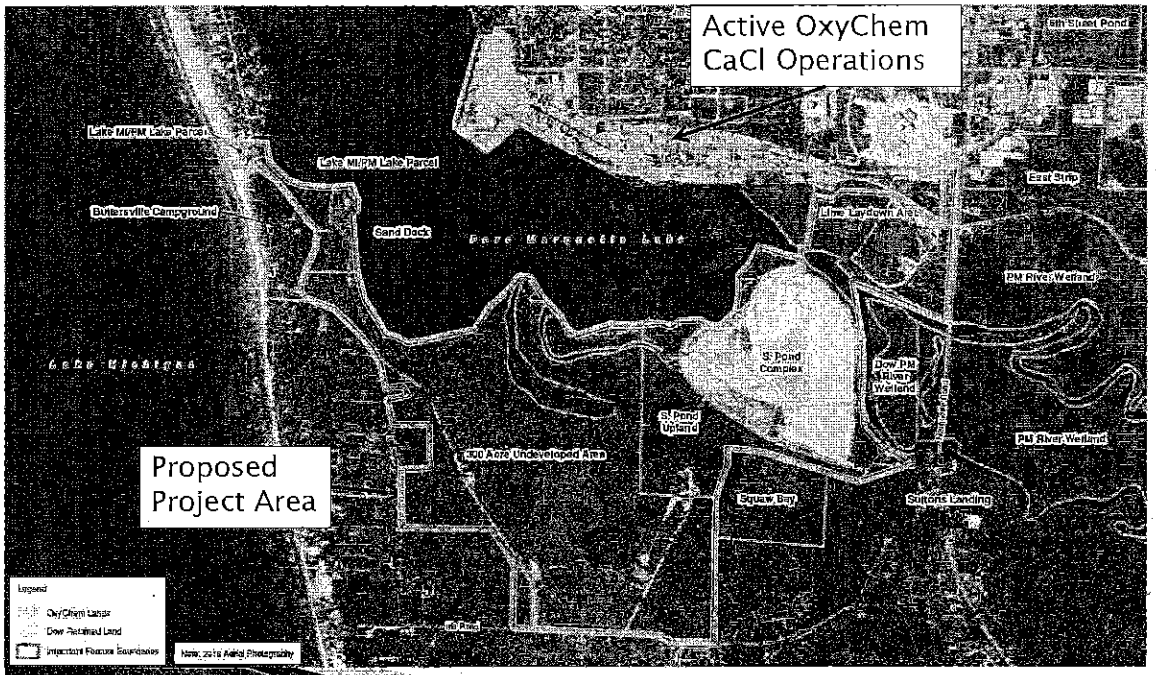


South Pond Aerial View – Conceptual Rendering



Project Area

(current boundary, subject to revision)

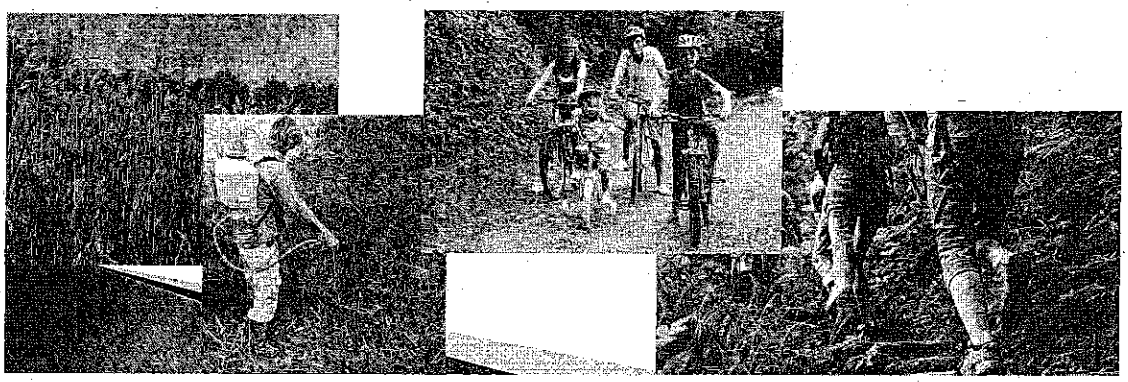


Conservation Focus

- General Concept - Land use focused on restoration and enhancement of habitat for Threatened and Endangered species. Create "destination" area for wildlife watching and low impact outdoor recreation. Develop multi-use trail system connecting Buttersville Peninsula to Ludington
- Primary Stakeholders -Pere Marquette Charter Township (PMCT) & Land Conservancy of West Michigan
- Other Key Stakeholders - The Nature Conservancy (TNC), Audubon Society (MI and National), Ducks Unlimited (DU) and others
- Long-Term Ownership - PMCT owns with conservation easement and stewardship support from stakeholders.

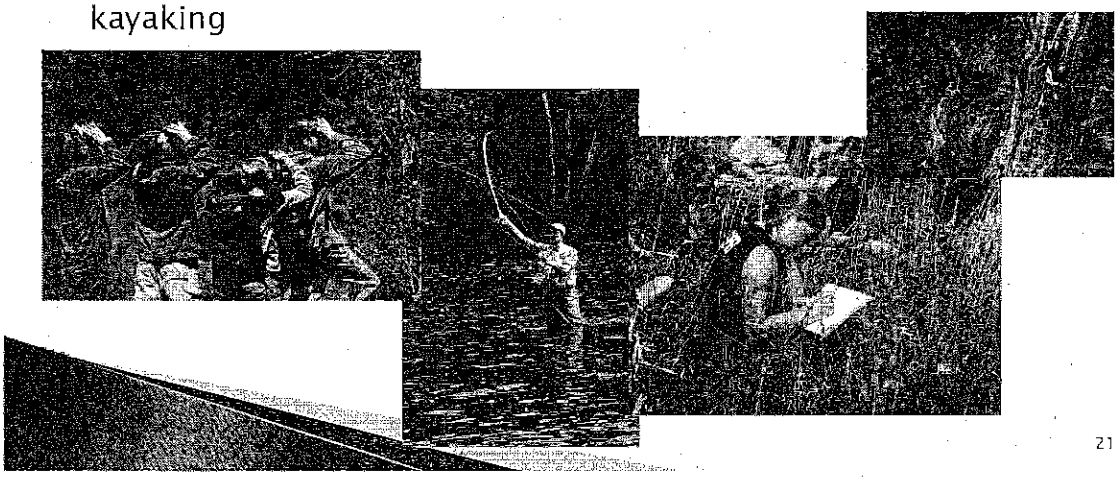
Conservation Focus - Key Features

- Conservation focused land use emphasizing habitat restoration and improvement
- Ludington-Buttersville Peninsula connector trail primarily along old railroad grade for hiking and bicycling
- Low-impact interior trail system for wildlife observation, hiking and snowshoeing
- Boat launch and fishing access on PM River

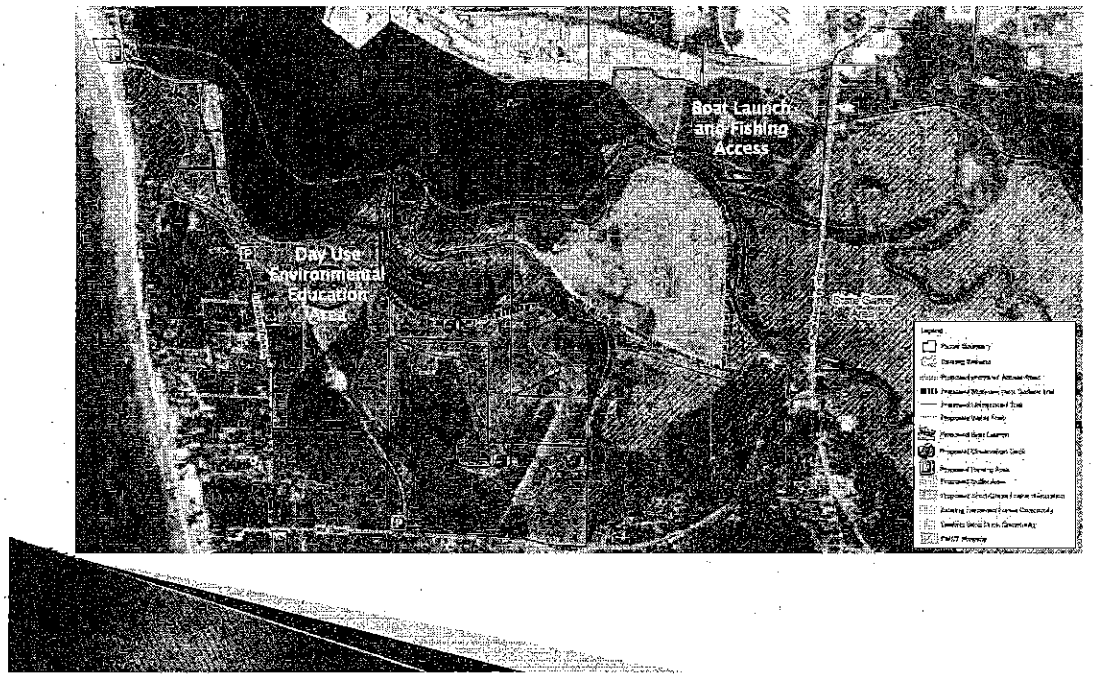


Conservation Focus – Key Features

- Water trail connecting Pere Marquette Wild and Scenic River with Buttersville Peninsula and Lake Michigan
- Refurbish AC Park for environmental education, picnicking and limited day use. Parking for trail head at Lakeshore Drive and Iris Road
- Improved access to PM Lake for ice fishing, hiking, and kayaking



Conservation Focus Key Features



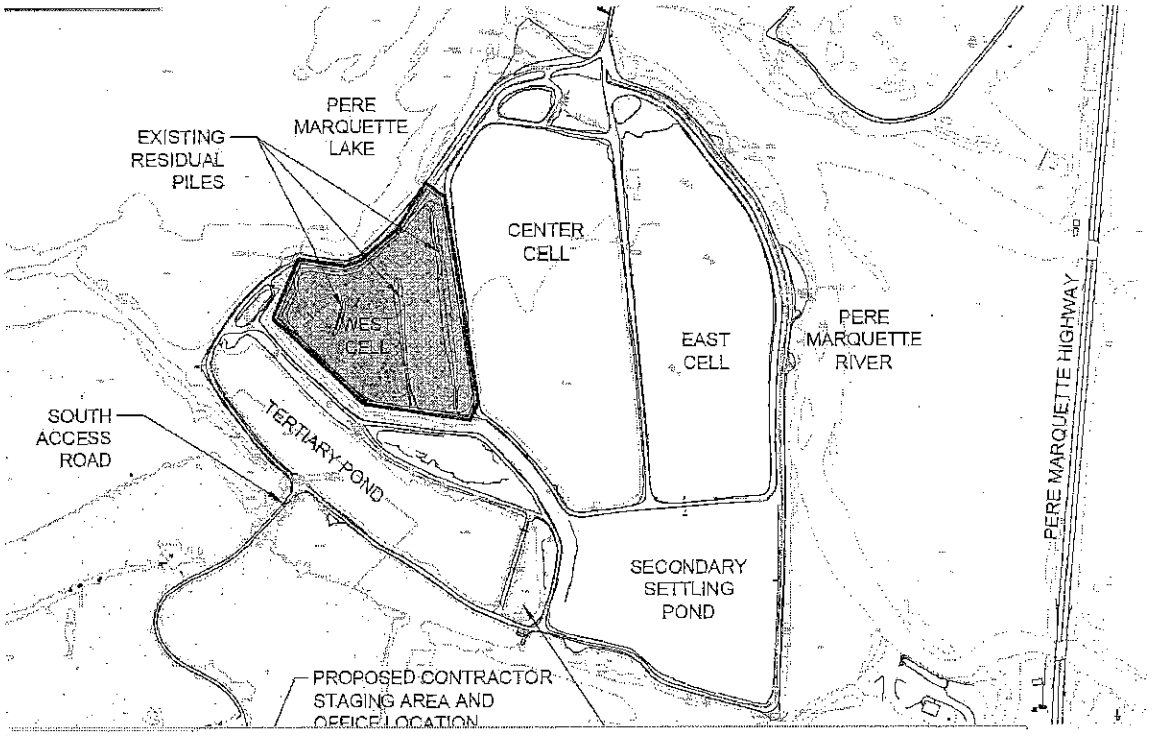
Approach/Milestones

- Recreation Plan Preparation – PMCT
- Property Transfer between Dow and Oxy
- Summit Meeting with Key Stakeholders, April 2014
- MNRTF Grant Preparation, Q3-Q4 2014
- Environmental Site Assessment Plan, Summer 2014
- MDEQ Endorsement of ESA Plan, Q4 2014
- MNRTF Grant Application due April 1, 2015
- Due Care Plan due October 1, 2015

Project Status

- Pere Marquette Charter Township
  - Township supportive as the MNRTF Grant applicant
  - Requested support from Land Conservancy of West Michigan (LCWM) and The Nature Conservancy (TNC)
  - In process of incorporating conservation opportunity of Dow lands into updated Recreation Plan
- Michigan Natural Resources Trust Fund
  - PMCT targeting grant proposal submission in April 2015
  - Other grants and funding sources will likely be pursued
- Ongoing Environmental Site Assessments

West Cell Project Update



West Cell Project Area

Summary of West Cell Work

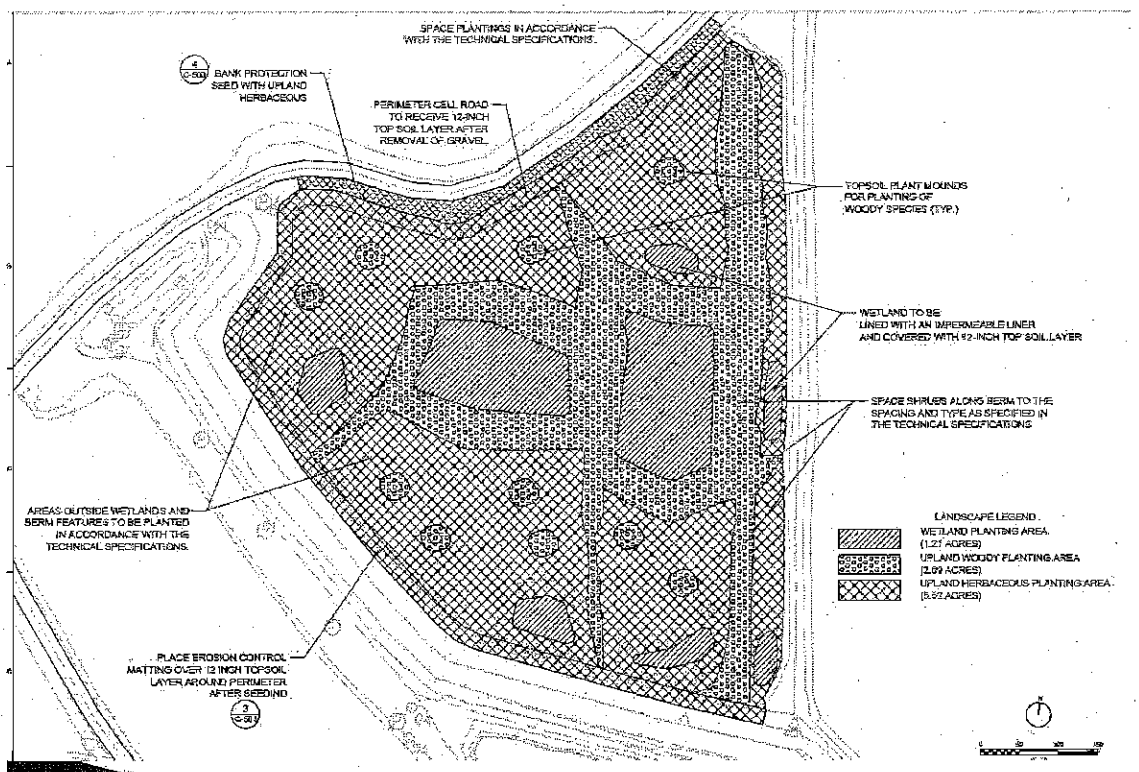
- Completed installation of cover over West Cell in 2013.
- Placed vegetative cover over approximately 10 total acres
- Initial cover vegetation was established prior to winter
- Additional plantings to occur in spring 2014.

Benefits of Vegetative Cover

- Eliminates direct exposure to residual solids
- Reduces infiltration from precipitation
- Improves aesthetics of cells
- Increases biodiversity and habitat and enhances ecological services compared to standard cover designs
- Less long-term maintenance requirements
- Provides opportunity to incorporate South Pond into a large, contiguous conservation-focused corridor linking Lake Michigan to Pere Marquette River

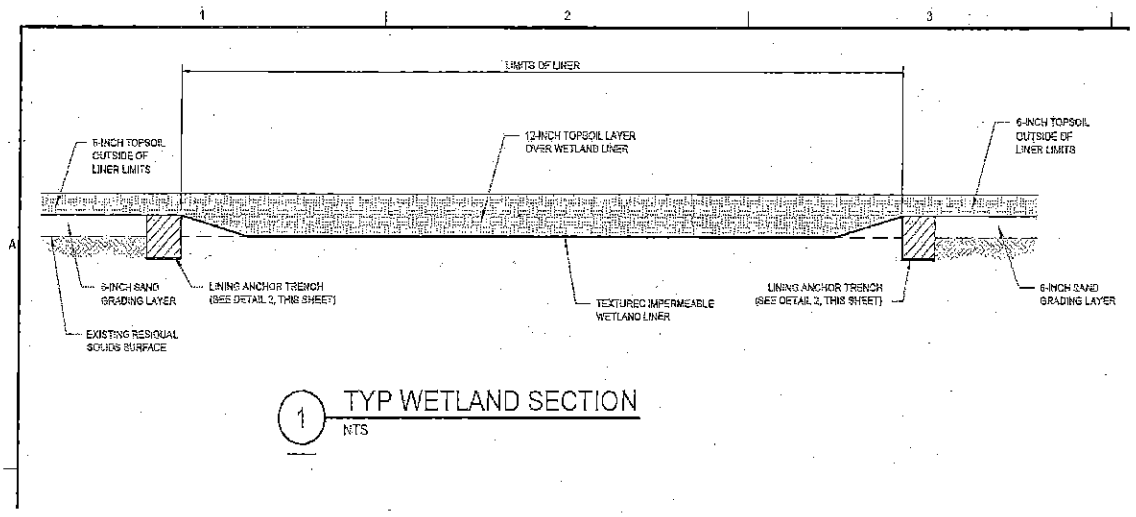
Vegetative Cover Design Elements

- Incorporates a mixture of upland and wetland areas with native plantings
- Upland areas consist of:
  - ~ 6-inch sand grading layer/capillary barrier
  - ~ 12 inch median topsoil cover (could range from 6-inches to several feet thick to support plant diversity)
  - Vegetation consisted of upland, native prairie species, shrubs and trees
- Wetland areas
  - Eight small perennial wetlands totaling 1.21 acres
  - PVC liner with 12-inch topsoil layer
  - Vegetation consisted of native wetland species



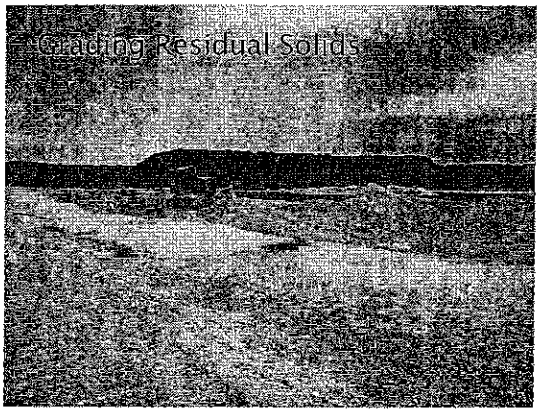
West Cell Final Configuration

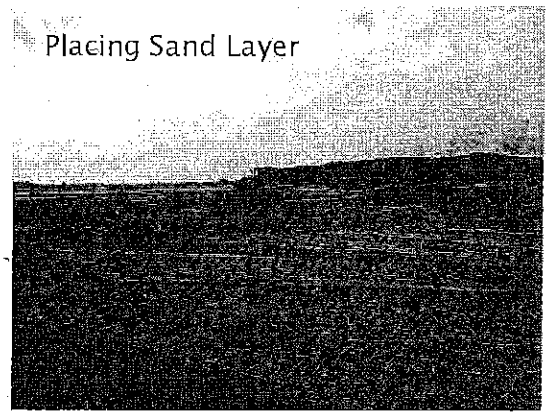
Typical Cover Cross Section Showing Materials

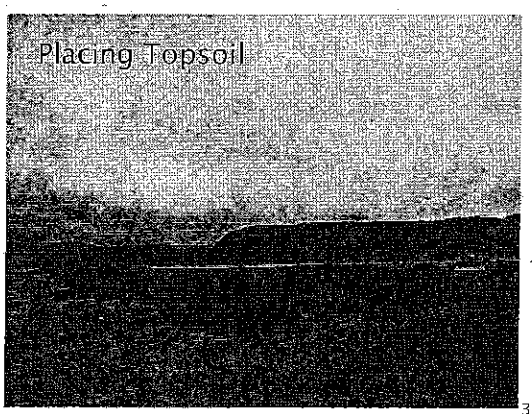


1 TYP WETLAND SECTION
NTS

31







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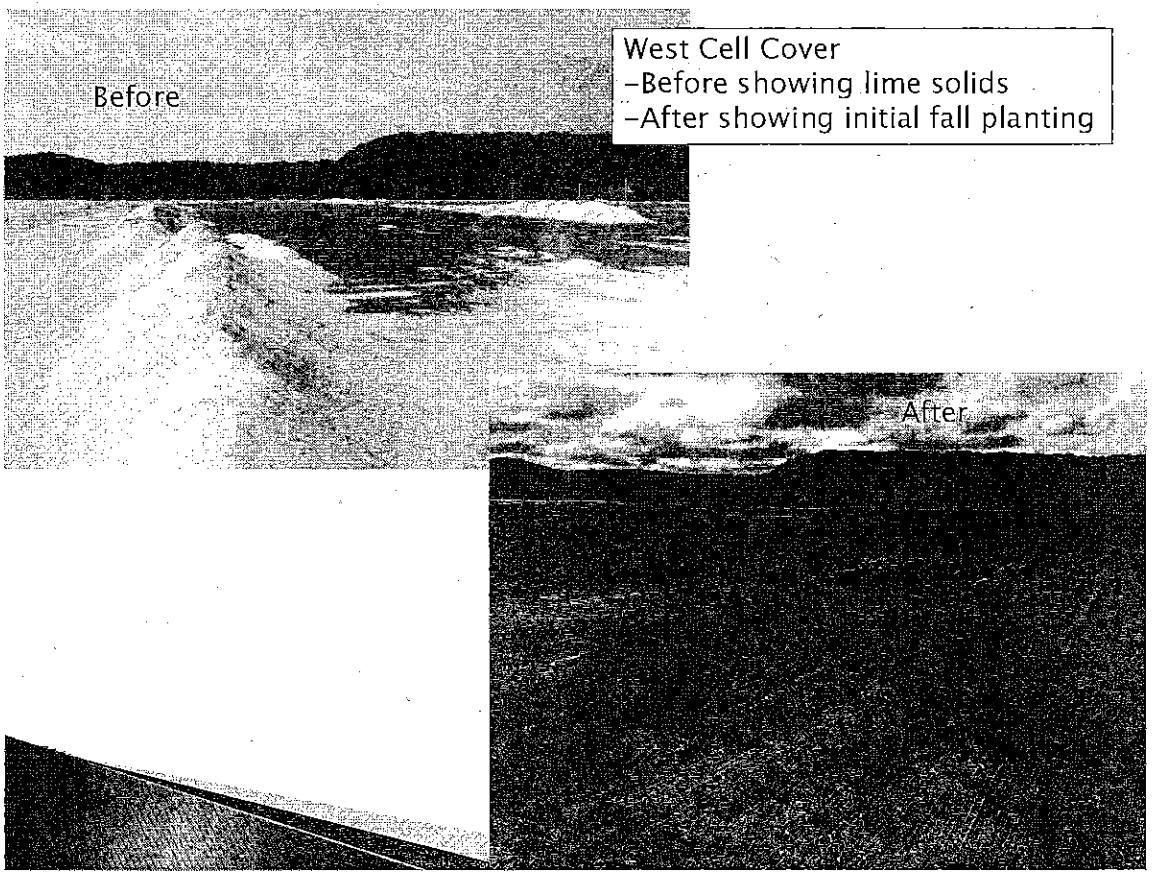
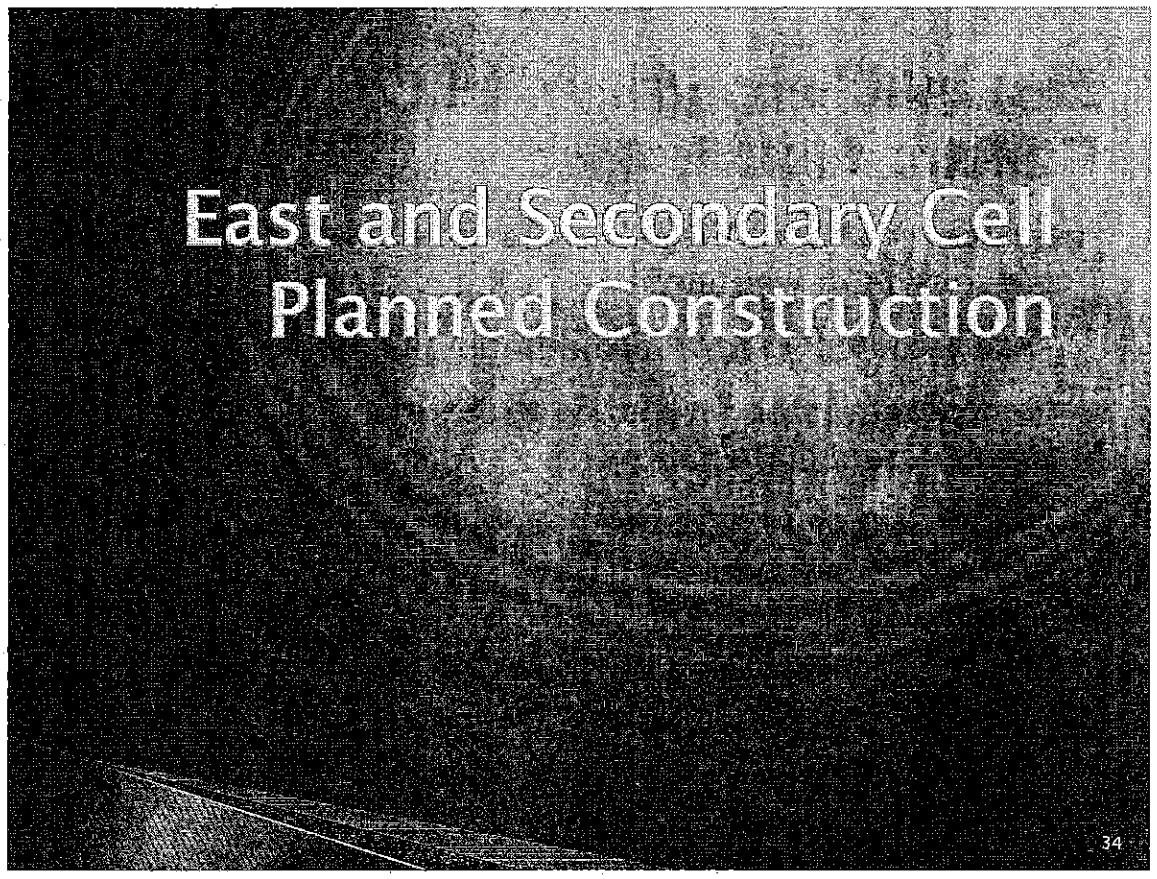
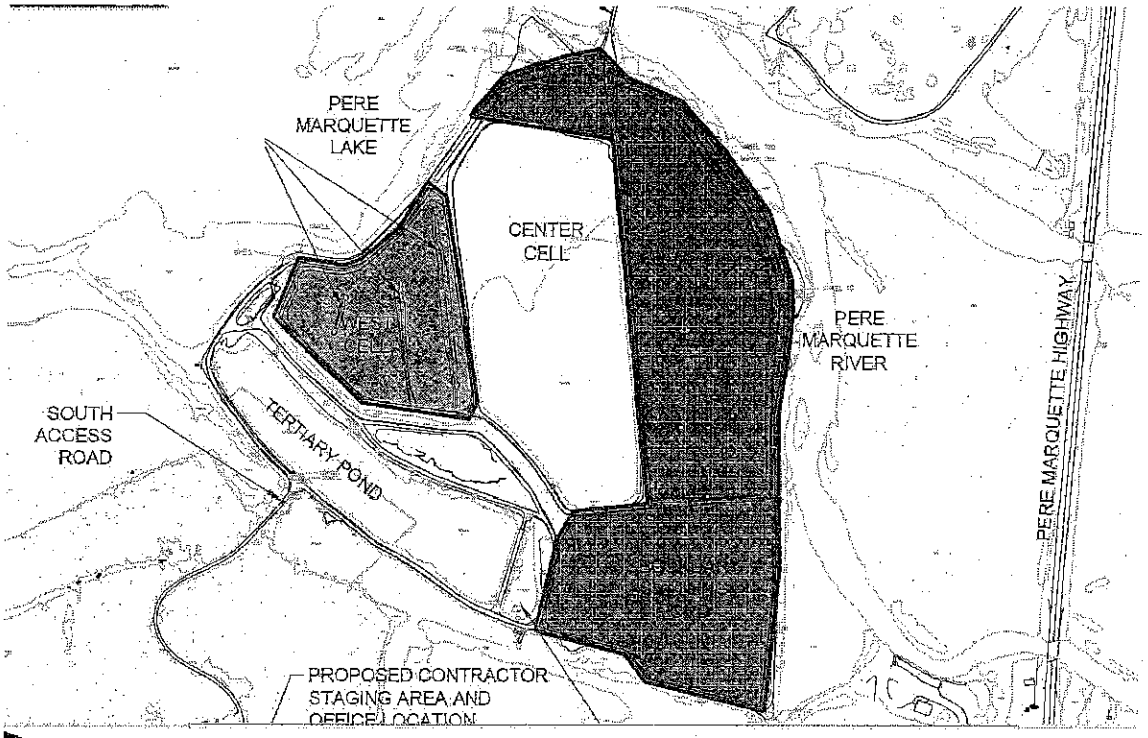


West Cell Cover
-Before showing lime solids
-After showing initial fall planting



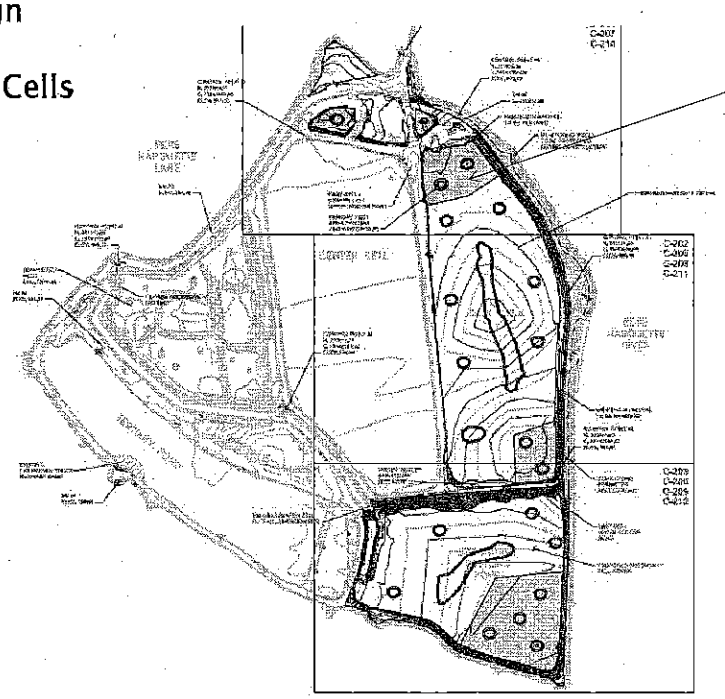


East and Secondary Cell Project Area

East and Secondary Cell Cover Construction Project

- Similar design to West Cell (sand barrier layer, topsoil, lined wetlands)
- Area to be covered approximately 33 acres in size
- Incorporate larger wetland areas into design due to larger acreage available
- Include improvements to perimeter dikes and unused lands on north end of South Pond complex. Goals:
  - Improve aesthetic from Pere Marquette Highway and surrounding areas
  - Facilitate possible multi-purpose non-motorized trail

Final Design East and Secondary Cells



East and Secondary Cell Schedule

- Initiate regulatory closure process of inactive portions of South Pond
- Spring 2014 initial earthwork
- Fall 2014 complete all earthwork and initial vegetation plantings
- Spring 2015 final plantings
- Fall 2014 – Fall 2015 ongoing monitoring and maintenance of the vegetative cover

Discussion of Closure Process

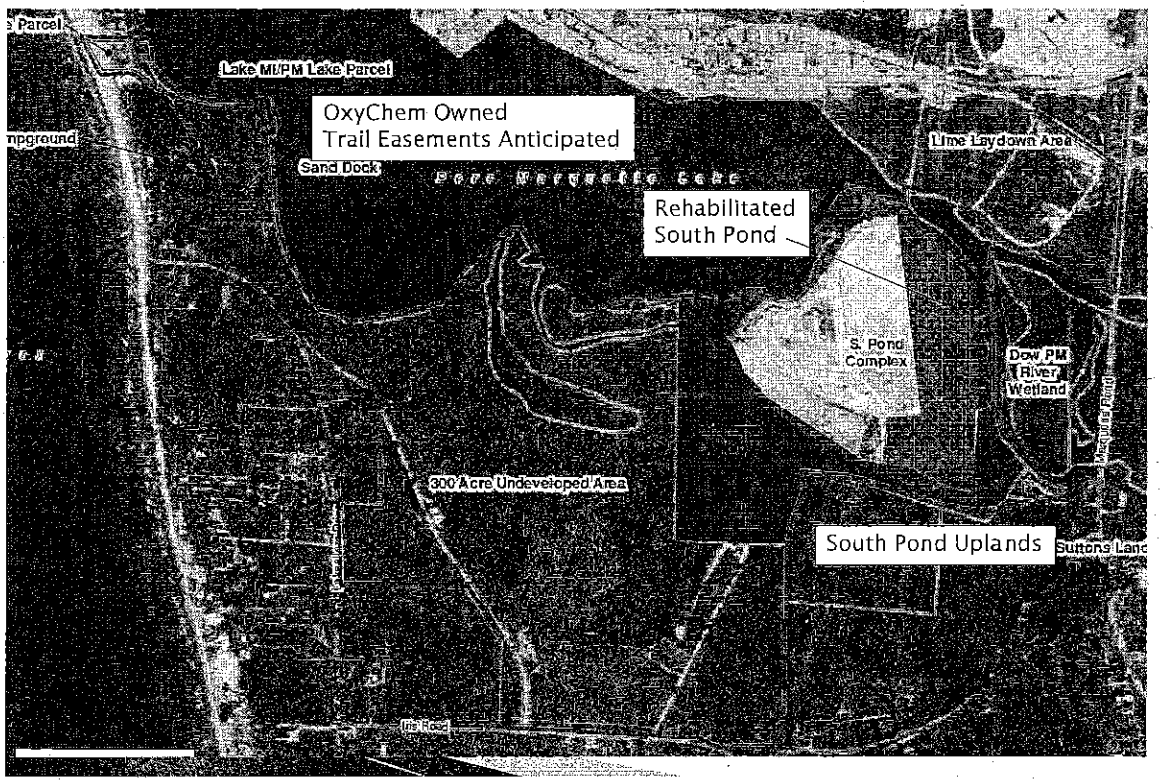
- Consistent with MDEQ Solid Waste Policy and Procedures Memo 115-25
  - Residual solids exceeds inert criteria
    - Designated as "site and source-separated materials" as provided in Rule 119 (R299.4119) of the Part 115 Rules
  - Received water before October 7, 1993
  - Known groundwater impacts
- Will seek closure in accordance with Part 201
- Install clean covers on inactive portions
- Proceed with Interim Response Activity Plan

Environmental Conditions of Property to be Transferred

Land Potentially in Public Ownership

- Former Lime Lay Down Area (~49 acres)
  - Dow owned. Features: currently undeveloped; fill materials placed over historic wetland; former oil storage tank; former equipment storage
- South Pond Uplands Area (~45 acres)
  - Currently OxyChem owned. Features: currently undeveloped; brine return well; former landfill; perimeter dikes from South Pond complex
- Undeveloped Area (~278-acres)
  - Dow owned. Features: currently undeveloped; former employee park; sand borrow pit; pipeline easement; no industrial activity
- Rehabilitated South Pond (~30 acres)
  - Currently OxyChem owned. Features: out of service ponds
- Lake Michigan & PM Lake beach parcel (~9 acres)
  - Dow owned. Features: public access to Lake Michigan beach

Project Area – Properties



Former Lime Lay Down Area

- Environmental Assessment Phase I Findings
  - Groundwater: Impacted by chloride and TDS
  - Soil: Historic wetland filled with various materials such as lime solids, ash, refractory brick, etc.
  - Surface Water: Evidence of discolored soil at seasonal seeps
  - Historic Operational Areas
    - Lime solids drying area (currently covered by soil)
    - Former Oil Storage Tank (demolished)
    - Former "Bone Yard"
    - Former Gas Plant (demolished) – located on property adjacent to land potentially to be in public ownership

Former Lime Lay Down Area

- Environmental Assessment Phase II Findings
  - Former Oil Storage Tank: No evidence of any impacts to soil or groundwater
  - Former Bone Yard: No evidence of any impacts
  - Former Gas Plant: PCE impacts in soil (Gas Plant is not on property that is part of conservation project)
  - Surface Soil: Arsenic in surface soil requires additional evaluation
  - Surface Water: Seeps dry
- 2014 Planned Additional Sampling (Phase III)
  - Surface samples across fill area
  - Seep samples
  - Soil and groundwater near former Gas Plant

Former Lime Lay Down Area

- Desired end use:
  - Public boat launch and multiuse non-motorized pathway connecting Ludington to Buttersville Peninsula and Lake Michigan
- Anticipated Path Forward
  - Complete assessment of soil conditions
    - If necessary, place additional fill materials over impacted areas
  - Place deed restrictions on property: recreational use only, prohibit groundwater use, and prohibit excavation and soil movement

South Pond Uplands Area

- Environmental Assessment Findings Phase I
  - Groundwater: Impacted by chloride and TDS
  - Soil: Fill materials used in dikes for South Pond complex.
  - Historic Operational Areas
    - Former Section 26 Landfill: Reportedly an area of solid non-hazardous waste disposal. Records suggest materials may have been removed.

South Pond Uplands Area

- Environmental Assessment Phase II Findings
  - Section 26 Landfill: Geophysical surveys indentified location of landfill – less than ½ acre in size.
- 2014 Planned Additional Sampling (Phase III)
  - Collect groundwater samples adjacent to landfill and surface water from any seeps that may be present proximal to landfill.

South Pond Uplands Area

- Desired end use:
  - Conservation area; multiuse non-motorized pathway connecting Ludington to Buttersville Peninsula and Lake Michigan; and hiking trail system
- Anticipated Path Forward
  - Complete assessment of former landfill and potential impacts to groundwater/surface water
    - If necessary, place additional cover materials over landfill
  - Place deed restrictions on property: recreational use only, prohibit groundwater use, and prohibit excavation of former landfill

Undeveloped Area

- Desired end use:
  - Conservation area; multiuse non-motorized pathway connecting Ludington to Buttersville Peninsula and Lake Michigan; day use area, and hiking trail system
- Anticipated Path Forward
  - No further environmental evaluation. Only known environmental condition is chloride in groundwater on portions of property.
  - Place deed restrictions on property: recreational use only and prohibit groundwater use in affected areas.

South Pond Rehabilitated Area

- Desired end use:
  - Conservation area; multiuse non-motorized pathway connecting Ludington to Buttersville Peninsula and Lake Michigan
- Anticipated Path Forward
  - Construct vegetative cover. Environmental conditions will be buried lime solids and chloride/TDS impacted groundwater.
  - Place deed restrictions on property: recreational use only and prohibit groundwater use

Path Forward

- Cover East and Secondary Cells (Q2-Q3 2014)
- Pursue regulatory closure of inactive portions of South Pond
- Work with PMCT and LCWM on MNRTF grant application (Q2-end of the year 2014)
- Coordinate property easements and land ownership adjustments (ongoing)
- Complete follow-up site investigations to address data gaps (Q2-Q3 2014)
- Complete environmental assessment reports for MDEQ endorsement (Q3-Q4 2014)

Action Items/Discussions

STATE OF MICHIGAN
DEPARTMENT OF ENVIRONMENTAL QUALITY
LANSING

RICK SNYDER
GOVERNOR

DAN WYANT
DIRECTOR

June 16, 2011

OXYCHEM CALCIUM CLORIDE PRODUCTS
1600 S MADISON ST
LUDINGTON, MI 49431

Dear Sir or Madam:

SUBJECT: Notification to Current Owner that their Property is Subject to Michigan and Federal Regulations for Corrective Action; MID 006 016 919

The Michigan Department of Environmental Quality (DEQ), Resource Management Division (RMD), is notifying you of regulatory obligations you may or may not know about. Your property is being, or has been in the past, used to treat, store or dispose hazardous waste, which subjects it to the requirements of the federal Resource Conservation and Recovery Act of 1976, as amended (RCRA), and Michigan's Part 111, Hazardous Waste Management, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (Act 451), and the administrative rules promulgated thereunder. As such, the law requires that your facility be investigated to determine if corrective actions must be completed at some point in time. The following obligations pertain to your property:

General Corrective Action

Under RCRA and Part 111 regulations, facilities that treated, stored, or disposed hazardous waste are subject to corrective action across the entire property. The property boundary was first identified in a RCRA Part A Permit Application submitted by an owner or operator of the property that conducted hazardous waste management activities. The original property may have been subdivided into parcels. Corrective action responsibilities remain *with* the property and *whoever is the present owner*. The corrective action responsibilities "remain with the land," even if a newly-purchased area is a small part of the original property. This is true whether the present owner is in the hazardous waste business (e.g., a generator) or not. For more information, some Internet resources are listed below:

http://www.epa.gov/epawaste/hazard/correctiveaction/index.htm
http://www.epa.gov/wastes/hazard/correctiveaction/resources/guidance/
http://www.epa.gov/wastes/inforesources/pubs/orientat/rom39.pdf
http://www.michigan.gov/deq/0,1607,7-135-3312_4118_4240---,00.html
http://www.michigan.gov/deq/0,1607,7-135-3312_4118_4240-56381-,00.html

Option for Owner Initiated Corrective Action

The regulatory focus so far has been on operating hazardous waste treatment, storage, and disposal facilities that were identified as high or medium priority based on environmental conditions. However, that does not preclude corrective action efforts at

other locations. Initiation of corrective action does not necessarily require a permit or an enforcement order from the DEQ or U.S. Environmental Protection Agency (U.S. EPA). Owners and operators of RCRA-regulated facilities may also volunteer to perform corrective action under a Voluntary Corrective Action Agreement (VCAA). There may be some activities necessary to achieve corrective action goals that require formal approval by the DEQ or U.S. EPA. Therefore, both agencies encourage owners and operators to work closely with them to obtain sufficient oversight during voluntary corrective action cleanup activities.

Deed Notices and Property Transaction

In addition, if the property is subject to corrective action, it is also subject to R 299.9525 of the Part 111 Rules; therefore, a deed notice must be filed for recording with the Register of Deeds for the county in which the property is located by the owner or operator. This deed notice should already be in place for your property as written notifications were attempted in 1999, 2000, 2001, and 2005. The rule requires that a deed notice be recorded for all hazardous waste treatment, storage, and disposal facilities (both interim and final status). The notice should state that the property has been used to manage hazardous waste and is subject to the corrective action requirements. The deed notice must include a legal description of the entire property subject to corrective action, not just the regulated hazardous waste management units. The statute also requires notice to the DEQ when a facility's ownership or operation controls change.

R 299.9525 Notice requirements

Rule 525. (1) An owner of a hazardous waste treatment, storage, or disposal facility shall execute and file a notice with the office of the register of deeds in the county in which the facility is located. The owner shall submit verification of the execution, filing, and recording of the notice to the department within 60 days of the effective date of this rule. The notice shall be titled "notice regarding statutory obligations applicable to property" and shall comply with all of the following requirements:

(a) The notice shall include a legal description of the land upon which the facility is located. The land and the facility shall be referred to as "the property."

(b) The notice shall state that the property has been used to manage hazardous waste and is subject to the corrective action requirements of part 111 of the act and RCRA, as amended by the 1984 hazardous and solid waste amendments.

(c) The form of the notice shall comply with the requirements of act 103 of the public acts of 1937, as amended, being §565.201 et seq. of the Michigan Compiled Laws.

(2) Owners or operators shall provide new owners or operators with a copy of the notice required pursuant to the provisions of subrule (1) of this rule.

(3) New owners or operators shall provide notice to the director of the transfer of ownership or operational control of a facility. The notification shall be

provided to the director not later than 90 days before the scheduled change in ownership or operational control.

(4) The requirements of subrules (1) to (3) of this rule apply to both of the following:

(a) Owners or operators of hazardous waste treatment, storage, or disposal facilities which have been issued an operating license under part 111 of the act.

(b) Owners or operators of hazardous waste treatment, storage, or disposal facilities which have not yet been issued an operating license under part 111 of the act.

The RMD will work with property owners to address corrective action concerns at your facility. If you believe that facility-wide corrective actions are already complete for your site or have any questions regarding this notification, please contact either Mr. Rich Conforti at confortir@michigan.gov or at 517-241-2108 or Mr. Clay Spencer at spencerc@michigan.gov or at 517-373-7968. Mr. Conforti and Mr. Spencer may also be contacted by mail at DEQ, RMD, Hazardous Waste Section, P.O. Box 30241, Lansing, Michigan 48909. We would appreciate your e-mail address in order to facilitate communication.

Sincerely,

DeLores Montgomery, Chief
Hazardous Waste Section
Resource Management Division
517-373-7973

cc: Mr. Jose Cisneros, U.S. EPA, Region 5
Mr. Steve Kitler, DEQ
Mr. Phil Roycraft, DEQ
Corrective Action File

HWP/CtE File 9/9

June 30, 2006

The Dow Chemical Company
Ludington, Michigan 49431
616 · 845-4411

Fed-Ex Number: 791985628051

Michigan Department of Environmental Quality
Waste and Hazardous Materials Division
User Charge Program
P.O. Box 30241
Lansing, MI 48909-7741

cc: Ms. Carol Menovske, MDEQ – Waste & Hazardous Materials, P.O. Box 30241, Lansing, MI 48909
Ms. Julie Blanchard, MDEQ – Waste & Hazardous Materials, P.O. Box 30241, Lansing, MI 48909
Mr. Stephen Buda, MDEQ – Waste & Hazardous Materials, P.O. Box 30241, Lansing, MI 48909

NONPAYMENT OF 2006 HAZARDOUS WASTE USER CHARGE
THE DOW CHEMICAL COMPANY, LUDINGTON SITE
MID 006 016 919

This letter is in follow-up to your June 1, 2006 letter regarding nonpayment of 2006 Hazardous waste user fees for The Dow Chemical Company's Ludington site. As specified in that letter, we are contesting the $2,000 user fee and the proposed 5% administrative penalty by requesting an informal conference to discuss the treatment, storage and disposal facility (TDSF) status that has been assigned to the Ludington site. Our belief, based on the attached records, is that the facility never operated as a TSDF. Rather, a Part A application was filed protectively and never proceeded further. The facility operated a less-than-90-day tank for a period of about 9 months, then closed and removed the tank. Since there is no requirement to obtain a TSDF license for a less-than-90-day tank, our understanding is that Dow's Ludington site is not and never was a TSDF. Consequently, the user fee should not apply.

Dow had taken/is taking the following actions:

1. Submission of the uncontested portion of the user fee (SQG) was completed on April 13, 2006 via Federal Express (tracking no. 7914 4401 4353).
2. Dow has reviewed the "FAQ on the 2005 TSDF User Charge" document available on the State of Michigan website. The FAQ appears to indicate that if a facility was in fact a TSDF, the user fee would apply. However, as noted above, Dow's Ludington site never operated as a TSDF.
3. Dow is gathering additional information on the Part A application submitted by the Ludington site for a waste solvent tank and the subsequent closure of the waste solvent tank. We are submitting the information currently in our possession at this time as requested in your June 1, 2006 letter; and additional information will be submitted under separate cover or at the time of the meeting.

Dow would like to discuss this issue further with the MDEQ, and we look forward to the informal conference. In the interim, if you have any questions regarding this information, please contact David Gustafson at (989) 636-2953 or Sharon Woolman at (989) 636-4644.

Michael W. Ryder

Michael W. Ryder
EH&S Responsible Care Leader
Environment, Health, and Safety
1600 S Madison Street
Ludington, MI 49431
231-845-4390

Attachments

Dow U.S.A.
The Dow Chemical Company
Ludington

October 8, 1992

Mr. Kevin M. Pierard, Chief
OH/MN Technical Enforcement Section
United States Environmental Protection Agency
Region 5
77 West Jackson Boulevard
Chicago, Il 60604-3590

Certified Mail No. P-096-797-838

Dear Mr. Pierard,

RE: Visual Site Inspection for The Dow Chemical Co, Ludington, Michigan

In our telephone conversation on October 2, 1992, you indicated that a Visual Site Inspection (VSI) of the Ludington Site would not be required if we could certify and document that our original RCRA Part A application was filed protectively. Our Part A was originally filed for an underground storage tank used for the storage of spent chlorinated solvents and oils. It is my understanding, through Celeste Brancel at PRC Environmental Management, that you have indicated that verification that this storage tank was used for less than 90 day storage only would adequately demonstrate that our Part A application was indeed filed protectively. Our records show that the waste solvent storage tank was installed in November of 1980 and was taken out of service in August of 1981. During the nine months that it was in service, it was emptied on the following dates: January 16, April 14, June 30, and August 13, 1981. Copies of the following original documents are attached.

Enclosure 1	Letter from G.R. Veurink, Dow USA, to Mr. James Mayka, USEPA Region 5, dated July 22, 1985. Letter specifies period of tank use and proposed closure plan.
Enclosure 2	Dow USA internal letter specifying termination of tank use, dated August 8, 1981
Enclosure 3	Hazardous Waste Manifest, January 16, 1981
Enclosure 4	Hazardous Waste Manifest, April 14, 1981
Enclosure 5	Hazardous Waste Manifest, June 30, 1981
Enclosure 6	Hazardous Waste Manifest, August 13, 1981

Based on my review of our files and the attached documents, I hereby certify that our original RCRA Part A application was filed protectively. If you have any questions regarding this information, please call me.

Sincerely,

Michael W. Ryder

Michael W. Ryder, Manager
Environmental Services
616-845-4390

Enclosure # 1

DOW CHEMICAL U.S.A.

July 22, 1985

MICHIGAN DIVISION
MIDLAND, MICHIGAN 48640

Mr. James Mayka, P.E.
Technical Program Section, 5HS-13
Solid Waste Branch
U.S. Environmental Protection Agency-Region V
230 South Dearborn Street
Chicago, IL 60604

Dear Mr. Mayka:

SUBJECT: CLOSURE OF STORAGE FACILITY, EPA ID NUMBER MID 006016919

In accordance with the requirements of 40 CFR 265 Subpart G, we are hereby submitting notice of intent to close subject facility. This facility consists of a 1,000 gallon capacity underground tank used for the storage of F001 waste. The tank was installed in November, 1980 and use of the tank was discontinued in August, 1981. At that time, the tank was rinsed clean with fuel oil, pumped empty and has been unused since.

The proposed Closure Plan consists of the following activities:

1. Excavate and remove tank and visibly inspect for integrity.

2. Determine tank integrity using a non-destructive test (such as a pressure test).

3. Inspect excavation to visually determine the presence or absense of residual waste.

4. Collect a representative soil sample and analyze for the presence of the F001 waste by infrared spectrophotometry.

5. Perform closure certification activities.

We hereby request your review and written approval of this plan as expeditiously as possible. Thank you for your consideration of this matter.

Should you have any questions, please contact Mr. Ric Olson at (517)636-3916.

Sincerely,

Gary R. Veurink

G. R. Veurink, Manager
Environmental Services
628 Building
(517)636-2646

ccr

DOW CHEMICAL U.S.A.

Enclosure #2

August 8, 1981

Waste Solvent Collection Please Note:

The east yard solvent tank (underground) will not be used after 8-10-81. Please use 55 gallon 90 day storage containers from now on.

Maintenance

cc: J. Tilbury

HAZARDOUS WASTE MANIFEST

Enclosure #3

Manifest Number

98-01-15-81-01

Location Code | Month | Day | Year | No.

Generator	Transporter	Treatment, Storage, or Disposal Facility
Company Name, Mailing Address, Telephone No. Dow Chemical U.S.A. 616/845-4516 S. Madison Street Ludington, MI 49431 EPA I.D. No. MID 006016919	Company Name, Mailing Address, Telephone No. Adams Trucking Inc. 616/869-5254 Box 777 Pentwater, MI 49449 EPA I.D. No. MIH 60297	Company Name, Mailing Address, Telephone No. DOW CHEMICAL COMPANY MIDLAND, MICHIGAN 48640 517/ 636-4400 EPA I.D. No. MIT 270019870

ITEM NO.	NO. OF UNITS	CONTAINER TYPE	D.O.T. SHIPPING NAME AND DESCRIPTION	D.O.T. HAZARD CLASS NAME	D.O.T. HAZARD CLASS CODE	U.N./N.A. NO.	EPA WASTE CODE NUMBER	TOTAL LBS. WASTE
1	1	T/T	RQ Waste Combustible Liquid N.O.S.	Combus-tible	01	NA 1993	F 001	14,000

EMERGENCY RESPONSE INFORMATION

1. Contain release. 2. Avoid personnel exposure. 3. Call (517) 636-4400 to report spill and to obtain assistance. 4. Specials: _____

CERTIFICATION

This is to certify that the above-named materials are properly classified, described, packaged, marked and labelled and are in proper condition for transportation according to the applicable regulations of the Department of Transportation and the U.S. Environmental Protection Agency.

E.G. Huller — Generator's Signature — 1/15 — Date Shipped

Edward G. Huller — Print Name — 845-4444 — Phone Number

This is to certify acceptance of the hazardous waste shipment.

Mike Jewett — Transporter's Signature — 1-15-80 — Date Accepted

Mike Jewett — Print Name

This is to certify acceptance of the hazardous waste for treatment, disposal, or storage.

K.J. Beyersdorf — TSDF Signature — 1-16-81 — Date Accepted

This is to certify that, to the best of my knowledge, the hazardous wastes have been disposed of by the Disposal Method and on the date so signified.

K.J. Beyersdorf — TSDF Signature — 1-16-81 — Disposal Date

Disposal Method: Incineration

GENERATOR RETURN COPY -- DISPOSAL CERTIFICATE

STATE OF MICHIGAN

WASTE DISPOSAL MANIFEST

Enclosure #5

☒ Act 64 Waste (HAZARD) ☐ Act 136 Waste (OTHER) MI 00140

IDENTIFICATION

Generator's Name	Primary Transporter's Name	Treatment, Storage or Disposal Facility
DOW CHEMICAL USA	COASTAL TANK LINES	DOW CHEMICAL CO
Site Address	**Transporters Address**	**Facility Address**
S. MADISON STREET LUDINGTON, MI 49431	250 N. CLEVELAND-MASSILLON RD P.O. BOX 5555 AKRON, OH 44313	MIDLAND, MI 48640
Phone Number	**Phone Number**	**Phone Number**
616) 845-4516	517) 496-3700	(517) 636-4400
Generator's Site EPA I.D. Number	**Transporter's EPA I.D. Number**	**Facility Site EPA I.D. Number**
MIDO06816919	MID049270614	MIDO007247 20

If more than one Transporter is to be utilized, give the Name and EPA I.D. Number of each:

WASTE INFORMATION

LOT NO.	U.S. D.O.T. Shipping Name	D.O.T. Hazard Class	U.N./N.A. No.	Haz. Class Code	Container No.	Container Type	Form: Solid	Form: Liquid	Form: Gas	Form: Sludge	Weight or Volume	Units	Hazardous Waste Number
1.	RQ WASTE COMBUSTIBLE LIQUID NOS.	COMBUSTIBLE	NA 1993	01	1	TR		X			9840	LBS	F001
2.													
3.													
4.													
5.													
6.													

COMMENTS

Include Safety precautions and special handling instructions.

CALL 800-424-9300 - TO REPORT SPILL AND TO OBTAIN ASSISTANCE

GENERATOR CERTIFICATION: I certify that the above named materials are properly classified, described, packaged, marked and labeled and are in proper condition for transportation according to the applicable regulations of the Department of Transportation and U.S. EPA. I further certify that the information contained on the manifest is factual. I understand that the failure to accurately report all information requested by the manifest constitutes a violation of 1979 PA64 and/or PA136. I further understand that this manifest may be used in administrative and court proceedings.

Generator Signature ① [signature] Date Shipped MO. DAY YEAR 06 30 91

HAULER'S CERTIFICATION: I certify acceptance of the above identified wastes for transportation. I further certify that I shall deliver the hazardous wastes, together with this manifest, only to the destination specified by the generator on this manifest. I understand that this manifest can be used in administrative and court proceedings.

Transporter Vehicle I.D. No. No. 1 H124-9

Subsequent Transporter Vehicle I.D. No's

Transporter Signature ② [signature]

Subsequent transporter(s) signature(s) ③

Date(s) Received 06 30 91

If the shipment cannot be delivered, describe the reasons for non-delivery.

TSDF CERTIFICATION: I certify receipt of this facility of the above identified wastes and that this facility is licensed to accept those wastes. I also certify that the wastes were accompanied by a manifest properly certified by both the generator and hauler and that this facility is the destination indicated on the manifest. I understand that this manifest can be used in administrative and court proceedings.

TSDF Signature ④ Robert D. Beyerstedt ☒ Accepted ☐ Rejected

Facility Site EPA I.D. Number MIT099747240 Date Received 06 30 91

Describe any significant discrepancies between manifest and shipment.

WASTE DISPOSAL MANIFEST [X] Act 64 Waste (HAZARD...) [ ] Act 136 Waste (OTHER) MI 0009008

Generator's Name	Primary Transporter's Name	Treatment, Storage or Disposal Facility
DOW CHEMICAL USA	COASTAL TANK LINES	DOW CHEMICAL CO
Site Address S. MADISON ST. LUDINGTON, MI 49431	Transporters Address 250 N. CLEVELAND-MASSILLON RD. P.O. BOX 5555 AKRON, OH 44313	Facility Address MIDLAND, MI 48640
Phone Number 616) 845-4516	Phone Number (517) 496-3700	Phone Number (517) 636-4400
Generator's Site EPA I.D. Number I D 0 0 6 0 1 6 9 1 9	Transporter's EPA I.D. Number M I D 0 4 9 2 7 0 6 1 4	Facility Site EPA I.D. Number M I D 0 0 0 7 2 4 7 2 4

If more than one Transporter is to be utilized, give the Name and EPA I.D. Number of each:

	U.S. D.O.T. Shipping Name	D.O.T. Hazard Class	U.N./N.A. No.	Haz. Class Code	Container No.	Container Type	Form: Solid	Form: Liquid	Form: Gas	Form: Sludge	Weight or Volume	Units	Hazardous Waste Number
1	RQ WASTE FLAMMABLE LIQUID NOS.	FLAMMABLE	UN-1193	0 1	1	TR		X			1 3 2 8 0	LBS	F 0 0 1
2													D 0 0 1
3													
4													
5													
6													

Enclosure #6

Include Safety precautions and special handling instructions.

GENERATOR CERTIFICATION: I certify that the above named materials are properly classified, described, packaged, marked and labeled and are in proper condition for transportation according to the applicable regulations of the Department of Transportation and EPA. I further certify that the information contained on the manifest is factual. I understand that the failure to accurately report all information requested by the manifest constitutes a violation of 1979 PA64 and/or PA136. I further understand that this manifest may be used in administrative and court proceedings.

Generator Signature ① [signature] Date Shipped MO. DAY YEAR 0 8 1 3 8 1

HAULER'S CERTIFICATION: I certify acceptance of the above identified materials for transportation. I further certify that I shall deliver the hazardous materials, together with this manifest, only to the destination specified by the generator on this manifest. I understand that this manifest can be used in administrative and court proceedings.

Transporter Vehicle I.D. No. No. 1 H 1 2 4 - 9

Subsequent Transporter Vehicle I.D. No's

Transporter Signature ② Kensington Coastal Lines Date(s) Received 0 8 1 3 8 1

Subsequent transporter(s) signature(s) ③

If shipment cannot be delivered, describe the reasons for non-delivery.

DISPOSAL CERTIFICATION: I certify receipt at this facility of the above identified wastes and that this facility is licensed to accept those wastes. I also certify that the wastes were accompanied by a manifest properly certified by both the generator and hauler and that this facility is the destination indicated on the manifest. I understand that this manifest can be used in administrative and court proceedings.

TSDF Signature ④ [signature] [X] Accepted [ ] Rejected Date Received JUL 30 81

Facility Site EPA I.D. Number M I D C F 1 2 4 7 2 4

Describe any significant discrepancies between manifest and shipment.

ALL SPILLS MUST BE REPORTED TO THE MICHIGAN POLLUTION EMERGENCY ALERTING SYSTEM AT 800—294-4706, 24 HOURS PER DAY AND THE NATIONAL RESPONSE CENTER AT 800—424-8802

Received from Steve Lucas, Dow
at 4/21/14 meeting.
Cheryl Howe

DOW

Dow U.S.A.

The Dow Chemical Company
Ludington

October 8, 1992

Mr. Kevin M. Pierard, Chief
OH/MN Technical Enforcement Section
United States Environmental Protection Agency
Region 5
77 West Jackson Boulevard
Chicago, Il 60604-3590

Certified Mail No. P-096-797-838

Dear Mr. Pierard,

RE: Visual Site Inspection for The Dow Chemical Co,
Ludington, Michigan

In our telephone conversation on October 2, 1992, you indicated that a Visual Site Inspection (VSI) of the Ludington Site would not be required if we could certify and document that our original RCRA Part A application was filed protectively. Our Part A was originally filed for an underground storage tank used for the storage of spent chlorinated solvents and oils. It is my understanding, through Celeste Brancel at PRC Environmental Management, that you have indicated that verification that this storage tank was used for less than 90 day storage only would adequately demonstrate that our Part A application was indeed filed protectively. Our records show that the waste solvent storage tank was installed in November of 1980 and was taken out of service in August of 1981. During the nine months that it was in service, it was emptied on the following dates: January 16, April 14, June 30, and August 13, 1981. Copies of the following original documents are attached.

Enclosure 1	Letter from G.R. Veurink, Dow USA, to Mr. James Mayka, USEPA Region 5, dated July 22, 1985. Letter specifies period of tank use and proposed closure plan.
Enclosure 2	Dow USA internal letter specifying termination of tank use, dated August 8, 1981
Enclosure 3	Hazardous Waste Manifest, January 16, 1981
Enclosure 4	Hazardous Waste Manifest, April 14, 1981
Enclosure 5	Hazardous Waste Manifest, June 30, 1981
Enclosure 6	Hazardous Waste Manifest, August 13, 1981

Based on my review of our files and the attached documents, I hereby certify that our original RCRA Part A application was filed protectively. If you have any questions regarding this information, please call me.

Sincerely,

Michael W. Ryder

Michael W. Ryder, Manager
Environmental Services
616-845-4390

Enclosure # 1

DOW CHEMICAL U.S.A.

July 22, 1985

MICHIGAN DIVISION
MIDLAND, MICHIGAN 48640

Mr. James Mayka, P.E.
Technical Program Section, 5HS-13
Solid Waste Branch
U.S. Environmental Protection Agency-Region V
230 South Dearborn Street
Chicago, IL 60604

Dear Mr. Mayka:

SUBJECT: CLOSURE OF STORAGE FACILITY, EPA ID NUMBER MID 006016919

In accordance with the requirements of 40 CFR 265 Subpart G, we are hereby submitting notice of intent to close subject facility. This facility consists of a 1,000 gallon capacity underground tank used for the storage of F001 waste. The tank was installed in November, 1980 and use of the tank was discontinued in August, 1981. At that time, the tank was rinsed clean with fuel oil, pumped empty and has been unused since.

The proposed Closure Plan consists of the following activities:

1. Excavate and remove tank and visibly inspect for integrity.

2. Determine tank integrity using a non-destructive test (such as a pressure test).

3. Inspect excavation to visually determine the presence or absense of residual waste.

4. Collect a representative soil sample and analyze for the presence of the F001 waste by infrared spectrophotometry.

5. Perform closure certification activities.

We hereby request your review and written approval of this plan as expeditiously as possible. Thank you for your consideration of this matter.

Should you have any questions, please contact Mr. Ric Olson at (517)636-3916.

Sincerely,

Gary R. Veurink

G. R. Veurink, Manager
Environmental Services
628 Building
(517)636-2646

ccr

DOW CHEMICAL U.S.A.

Enclosure #2

August 8, 1981

Waste Solvent Collection Please Note:

The east yard solvent tank (underground) will not be used after 8-10-81. Please use 55 gallon 90 day storage containers from now on.

Maintenance

cc: J. Tilbury

HAZARDOUS W[redacted]TE MANIFEST

Enclosure #3

Manifest Number

98 - 01 - 15 - 81 - 01

Location Code | Month | Day | Year | No.

Generator	Transporter	Treatment, Storage, or Disposal Facility
Company Name, Mailing Address, Telephone No. Dow Chemical U.S.A. 616/845-4516 S. Madison Street Ludington, MI 49431 EPA I.D. No. MID 006016919	Company Name, Mailing Address, Telephone No. Adams Trucking Inc. 616/869-5254 Box 777 Pentwater, MI 49449 EPA I.D. No. MIH 60297	Company Name, Mailing Address, Telephone No. DOW CHEMICAL COMPANY MIDLAND, MICHIGAN 48640 517/ 636-4400 EPA I.D. No. MIT 270019870

ITEM NO.	NO. OF UNITS	CONTAINER TYPE	D.O.T. SHIPPING NAME AND DESCRIPTION	D.O.T. HAZARD CLASS NAME	D.O.T. HAZARD CLASS CODE	U.N./N.A. NO.	EPA WASTE CODE NUMBER	TOTAL LBS. WASTE
1	1	T/T	RQ Waste Combustible Liquid N.O.S.	Combus-tible	01	NA 1993	F 001	14,000

EMERGENCY RESPONSE INFORMATION

1. Contain release. 2. Avoid personnel exposure. 3. Call (517) 636-4400 to report spill and to obtain assistance. 4. Specials: _____

CERTIFICATION

This is to certify that the above-named materials are properly classified, described, packaged, marked and labelled and are in proper condition for transportation according to the applicable regulations of the Department of Transportation and the U.S. Environmental Protection Agency.

E. G. Huller — Generator's Signature

1/15 — Date Shipped

Edward G. Huller — Print Name

845-4444 — Phone Number

This is to certify acceptance of the hazardous waste shipment.

Mike Jewett — Transporter's Signature

1-15-80 — Date Accepted

Mike Jewett — Print Name

This is to certify acceptance of the hazardous waste for treatment, disposal, or storage.

K. D. Beyersdorf — TSDF Signature

1-16-81 — Date Accepted

This is to certify that, to the best of my knowledge, the hazardous wastes have been disposed of by the Disposal Method and on the date so signified.

K. D. Beyersdorf — TSDF Signature

1-16-81 — Disposal Date

Disposal Method: Incineration

GENERATOR RETURN COPY -- DISPOSAL CERTIFICATE

HAZARDOUS WA[redacted] MANIFEST

Enclosure #4

Manifest Number
98 - 04 - 14 - 81 - 02
Location Code | Month | Day | Year | No.

Generator	Transporter	Treatment, Storage, or Disposal Facility
Company Name, Mailing Address, Telephone No. Dow Chemical U.S.A. 616/845-4516 S. Madison Street Ludington, MI 49431 EPA I.D. No.	Company Name, Mailing Address, Telephone No. Coastal Tank Lines 517/496-3700 250 N. Cleveland - Massillon Rd. P.O. Box 5555 Akron, OH 44313 EPA I.D. No. MID - 049270614	Company Name, Mailing Address, Telephone No. DOW CHEMICAL COMPANY MIDLAND, MICHIGAN 48640 517/ 636-4400 EPA I.D. No. MID 000724724

ITEM NO.	NO. OF UNITS	CONTAINER TYPE	D.O.T. SHIPPING NAME AND DESCRIPTION	D.O.T. HAZARD CLASS NAME	D.O.T. HAZARD CLASS CODE	U.N./N.A. NO.	EPA WASTE CODE NUMBER	TOTAL LBS. WASTE
1	1	T/T	RQ Waste Combustible Liquid N.O.S.	Combus-tible	01	NA 1993	F 001	13,800 lbs.

EMERGENCY RESPONSE INFORMATION

1. Contain release. 2. Avoid personnel exposure. 3. Call (517) 636-4400 to report spill and to obtain assistance. 4. Special:

CERTIFICATION

This is to certify that the above-named materials are properly classified, described, packaged, marked and labelled and are in proper condition for transportation according to the applicable regulations of the Department of Transportation and the U.S. Environmental Protection Agency.

Generator's Signature — Date Shipped

Edward G. Huller — 845-4444

Print Name — Phone Number

This is to certify acceptance of the hazardous waste shipment.

Scott Simmons — 4/14/81

Transporter's Signature — Date Accepted

Scott Simmons

Print Name

This is to certify acceptance of the hazardous waste for treatment, disposal, or storage.

TSDF Signature — Date Accepted 4/14/81

This is to certify that, to the best of my knowledge, the hazardous wastes have been disposed of by the Disposal Method and on the date so signified.

TSDF Signature — Disposal Date 4-14-81

Disposal Method Incineration

GENERATOR RETURN COPY -- DISPOSAL CERTIFICATE

STATE OF MICHIGAN

WASTE DISPOSAL MANIFEST

Enclosure #5

☒ Act 64 Waste (HAZARD) ☐ Act 136 Waste (OTHER)

MI 00140

IDENTIFICATION

Generator's Name	Primary Transporter's Name	Treatment, Storage or Disposal Facility
DOW CHEMICAL USA	COASTAL TANK LINES	DOW CHEMICAL CO
Site Address	**Transporters Address**	**Facility Address**
S. MADISON STREET LUDINGTON, MI 49431	250 N. CLEVELAND-MASSILLON RD P.O. BOX 5555 AKRON, OH 44313	MIDLAND, MI 48640
Phone Number	**Phone Number**	**Phone Number**
(616) 845-4516	(517) 496-3700	(517) 636-4400
Generator's Site EPA I.D. Number	**Transporter's EPA I.D. Number**	**Facility Site EPA I.D. Number**
MIDO06B16919	MID049270514	MIDO007247 [illegible]

If more than one Transporter is to be utilized, give the Name and EPA I.D. Number of each:

WASTE INFORMATION

LOT NO.	U.S. D.O.T. Shipping Name	D.O.T. Hazard Class	U.N./N.A. No.	Haz. Class Code	Container No.	Container Type	Form: Solid	Form: Liquid	Form: Gas	Form: Sludge	Weight or Volume	Units	Hazardous Waste Number
1.	RQ WASTE COMBUSTIBLE LIQUID NOS.	COMBUSTIBLE	NA 1993	01	1	TR		X			1980	LBS	F001
2.													
3.													
4.													
5.													
6.													

COMMENTS

Include Safety precautions and special handling instructions.

CALL 800-424-9300 - TO REPORT SPILL AND TO OBTAIN ASSISTANCE

TRANSPORTER COMPLETES

GENERATOR CERTIFICATION: I certify that the above named materials are properly classified, described, packaged, marked and labeled and are in proper condition for transportation according to the applicable regulations of the Department of Transportation and U.S. EPA. I further certify that the information contained on the manifest is factual. I understand that the failure to accurately report all information requested by the manifest constitutes a violation of 1979 PA64 and/or PA136. I further understand that this manifest may be used in administrative and court proceedings.

Generator Signature ① [signature] — Date Shipped MO. DAY YEAR: 06 30 81

HAULER'S CERTIFICATION: I certify acceptance of the above identified wastes for transportation. I further certify that I shall deliver the hazardous wastes, together with this manifest, only to the destination specified by the generator on this manifest. I understand that this manifest can be used in administrative and court proceedings.

Transporter Vehicle I.D. No. No. 1 H124-9

Subsequent Transporter Vehicle I.D. No's

Transporter Signature ② [signature]

Subsequent transporter(s) signature(s) ③

Date(s) Received: 06 30 81

If the shipment cannot be delivered, describe the reasons for non-delivery.

TSDF COMPLETES

TSDF CERTIFICATION: I certify receipt of this facility of the above identified wastes and that this facility is licensed to accept those wastes. I also certify that the wastes were accompanied by a manifest properly certified by both the generator and hauler and that this facility is the destination indicated on the manifest. I understand that this manifest can be used in administrative and court proceedings.

TSDF Signature ④ Robert L. Bejerotor — ☒ Accepted ☐ Rejected

Facility Site EPA I.D. Number MID009724724

Date Received: 06 30 81

Describe any significant discrepancies between manifest and shipment.

WASTE DISPOSAL MANIFEST

[X] Act 64 Waste (HAZARD.) [ ] Act 136 Waste (OTHER) MI 0059008

Generator's Name	Primary Transporter's Name	Treatment, Storage or Disposal Facility
DOW CHEMICAL USA	COASTAL TANK LINES	DOW CHEMICAL CO
Site Address	**Transporter's Address**	**Facility Address**
S. MADISON ST. LUDINGTON, MI 49431	250 N. CLEVELAND-MASSILLON RD P.O. BOX 5555 AKRON, OH 44313	MIDLAND, MI 48640
Phone Number	**Phone Number**	**Phone Number**
(616) 845-4516	(517) 496-3700	(517) 636-4400
Generator's Site EPA I.D. Number	**Transporter's EPA I.D. Number**	**Facility Site EPA I.D. Number**
MID060169119	MID049270614	MID007247241

If more than one Transporter is to be utilized, give the Name and EPA I.D. Number of each:

	U.S. D.O.T. Shipping Name	D.O.T. Hazard Class	U.N./N.A. No.	Haz. Class Code	Container No.	Container Type	Form Solid	Form Liquid	Form Gas	Form Sludge	Weight or Volume	Units	Hazardous Waste Number
1	RQ WASTE FLAMMABLE LIQUID NOS.	FLAMMABLE	UN-1193	011	1	TR		X			132180	LBS	F101
2													D001
3													
4													
5													
6													

Enclosure #6

Include Safety precautions and special handling instructions.

GENERATOR CERTIFICATION: I certify that the above named materials are properly classified, described, packaged, marked and labeled and are in proper condition for transportation according to the applicable regulations of the Department of Transportation and EPA. I further certify that the information contained on the manifest is factual. I understand that the failure to accurately report all information requested by the manifest constitutes a violation of 1979 PA64 and/or PA136. I further understand that this manifest may be used in administrative and court proceedings.

Generator Signature ① [signature] — Date Shipped MO. DAY YEAR: 08 13 81

HAULER'S CERTIFICATION: I certify acceptance of the above identified materials for transportation. I further certify that I shall deliver the hazardous materials, together with this manifest, only to the destination specified by the generator on this manifest. I understand that this manifest can be used in administrative and court proceedings.

Transporter Vehicle I.D. No. No. 1 H124-9

Subsequent Transporter Vehicle I.D. No's

Transporter Signature ② [signature] Herrington for Coastal Tank Lines

Subsequent Transporter(s) signature(s) ③

Date(s) Received: 08 13 81

If shipment cannot be delivered, describe the reasons for non-delivery.

TSDF CERTIFICATION: I certify receipt at this facility of the above identified wastes and that this facility is licensed to accept those wastes. I also certify that the wastes were accompanied by a manifest properly certified by both the generator and hauler and that this facility is the destination indicated on the manifest. I understand that this manifest can be used in administrative and court proceedings.

TSDF Signature ④ [signature]

Facility Site EPA I.D. Number: MIDOO724724

[X] Accepted [ ] Rejected

Date Received: JY 13 81

Describe any significant discrepancies between manifest and shipment.

*** SPILLS MUST BE REPORTED TO THE MICHIGAN POLLUTION EMERGENCY ALERTING SYSTEM AT 800—292-4706, 24 HOURS PER DAY AND THE NATIONAL RESPONSE CENTER AT 800—424-8802

Rule: 525 Deed Notice
MID 006 016 919

MID 006 016 919
OCCIDENTAL
LUDINGTON

Archive
7/31/03

LIBER 533 PAGE 1310

STATE OF MICHIGAN COUNTY OF MASON
Recorded Feb 13, 2002
at 9:48a Liber 533 Page 1310 - 13
Margaret Kobaki Elliott
Register of Deeds

NOTICE REGARDING STATUTORY OBLIGATIONS APPLICABLE TO PROPERTY

The Dow Chemical Company, a Delaware corporation, with its executive offices located at 1600 South Madison, Ludington, Michigan, 49431, as the owner of the property described in Exhibit A hereto (the "Property"), is recording this notice with the Register of Deeds for Mason County, Michigan, pursuant to the requirements of Michigan Administrative Code R299.9525.

Portions of the Property have been used to manage hazardous waste, and the Property subject to the corrective action requirements of Part 111, Hazardous Waste Management, of the Michigan Natural Resources and Environmental Protection Act, 1994 PA 451, as amended, and the federal Resource Conservation and Recovery Act., 42 USC Section 6901 et seq., as amended by the 1984 Hazardous and Solid Waste Amendments.

IN WITNESS WHEREOF, The Dow Chemical Company has caused this notice to executed this 12th day of February, 2002.

WITNESS:

THE DOW CHEMICAL COMPANY

By: Michael Miller

Its: Cal/Mag Operations Leader

STATE OF MICHIGAN)
) SS.
COUNTY OF MAASON)

On this 12th day of February, 2002, before me, a Notary Public in and for said County, appeared Michael Miller, the Cal/Mag Operations Leader of The Dow Chemical Company, a Delaware corporation, who acknowledges that he/she has the authority to execute the above instrument and acknowledged that he/she executed same as his/her free act and deed on behalf of the corporation.

Linda J. Crowley
(Notary Public)
Mason County, Michigan
My Commission Expires:

LINDA J. CROWLEY
Notary Public, Mason County, MI
My Commission Expires Oct 29, 2003

AFTER RECORDING RETURN TO:
TOBY A. THREET
47 Building
Midland, Michigan 48667

EXHIBIT "A"

Legal Description

Property Description: Property lines extend to the waters edge and encompass all lands between the following described lines and waters edge.
Beginning at a point that is near the waters edge of Pere Marquette Lake and N79°31'20"W 3148.35 ft from the C ¼ corner of section 23, T18N, R18W, Pere Marquette Township, Mason County, Michigan,
Thence N89°29'53"E 500.00 ft. to the West side of Washington St.,
Thence S00°29'02"E 633.00 ft. along the West side of Washington St. to the South side of Sixth St.,
Thence N89°29'53"E 739.32 ft. along the South side of Sixth St. to the West side of Madison St.,
Thence S00°23'59"E 529.18 ft. along the West side of Madison St.,
Thence N89°34'08"E 1551.75 ft. to the East side of Grant St.,
Thence N00°25'33"W 160.00 ft. along the East side of Grant St. to the South side of Seventh St.,
Thence N89°35'54"E 369.97 ft. along the South side of Seventh St. to the East side of Sherman St.,
Thence N00°25'10"W 369.90 ft. along the East side of Sherman St. to the South side of Sixth St.,
Thence N89°40'15"E 185.00 ft. along the South side of Sixth St.,
Thence S00°25'10"E 100.00 ft.,
Thence N89°40'15"E 15.00 ft.,
Thence S00°43'27"E 199.17 ft.,
Thence N89°45'44"E 169.59 ft.,
Thence S00°26'00"E 442.89 ft.,
Thence S69°23'41"E 725.00 ft.,
Thence S88°01'29"E 407.10 ft.,
Thence S01°23'59"W 82.82 ft.,
Thence S76°49'06"E 716.62 ft.,
Thence S05°00'41"W 78.34 ft. to the Northerly railroad right-of-way.
Thence S89°38'19"E 323.55 ft. along said Northerly railroad right-of-way,
Thence along said Northerly railroad right-of-way and a curve to the left whose radius is 1424.14 ft. a distance of 682.71ft. (chord bearing and distance arc N76°37'41"E 676.19 ft.),
Thence N62°53'41"E 134.79 ft. along said Northerly right-of-way to the centerline of Old Highway 31 (Pere Marquette Highway),
Thence S05°25'13"W 741.49 ft. along the centerline of said highway,
Thence along said highway centerline and a curve to the right whose radius is 51295.00 ft. a distance of 683.31 ft. (chord bearing and distance of S05°04'43"W 683.31 ft.),

Thence S04°44'13"W 890 ft. more or less along said highway centerline to the intersection the thread of the North Branch of the Pere Marquette River and said highway centerline,
Thence Northwesterly along the thread of said North branch of the Pere Marquette River to the intersection of the North Branch and South Branch of the Pere Marquette River,
Thence Southeasterly along the thread of the South Branch of the Pere Marquette River to a point that is N06°26'34"W 2791.96 ft. from the SE corner of section 26, T18N, R18W, Pere Marquette Township, Mason County, Michigan,
Thence S47°59'01"W 650.00 ft.,
Thence N71°48'59"W 1838.20 ft. to the N-S ¼ line of said section 26,
Thence S01°36'31"W 128.60 ft. along the N-S ¼ line to the C ¼ corner of said section 26,
Thence S01°36'31"W 2643.78 ft. along the N-S ¼ line of said section 26 to the S ¼ corner of said section 26,
Thence S02°01'30"W 71.73 ft. to the centerline of Iris Rd.,
Thence along the centerline of Iris Rd. and a curve to the right whose radius is 818.51 ft. a distance of 514.29 ft. (chord bearing and distance of N86°54'14"W 505.87 ft.),
Thence along the centerline of Iris Rd. and a curve to the left whose radius is 1432.40 ft. a distance of 437.50 ft. (chord bearing and distance of N77°39'14"W 435.80 ft.) to the south line of said section 26,
Thence N86°24'30"W 338.64 ft. along the south line of said section 26 to the W 1/16th corner of said section 26,
Thence N86°24'57"W 1316.25 ft. along the South line of said section 26 to the SW corner of said section 26,
Thence N01°45'24"E 793.20 ft. along the west line of said section 26,
Thence N34°13'25"W 640.23 ft. to the South 1/16th line of section 27, T18N, R18W, Pere Marquette Township, Mason County, Michigan,
Thence N88°41'36"W 1199.86 ft. along the south 1/16th line of said section 27 to the centerline of Lakeshore Dr.,
Thence N00°54'23"E 598.79 ft. along the centeline of Lakeshore Dr.,
Thence along the centerline of Lakeshore Dr. and a curve to the left whose radius is 759.28 ft. a distance of 169.05 ft. (chord bearing and distance of N05°28'20"W 168.70 ft.),
Thence S87°33'26"E 414.55 ft.,
Thence N02°25'34"E 579.50 ft. to the E-W ¼ line of said section 27,
Thence N87°33'26"W 562.02 ft. along said E-W ¼ line of section 27 and the centerline of Lakeshore Dr.,
Thence N12°12'00"W 313.71 ft. along the centerline of Lakeshore Dr.,
Thence N84°27'06"E 276.81 ft.,
Thence N12°07'18"W 150.00 ft.,
Thence S84°27'31"W 277.02 ft.,
Thence N12°12'00"W 264.41 ft. along the centerline of Lakeshore Dr.,

Thence along the centerline of Lakeshore Dr. and a curve to the left whose radius is 527.96 ft. a distance of 218.20 ft. (chord bearing and distance of N24°02'24"W 216.65 ft.),
Thence N35°52'47"W 384.72 ft. along the centerline of Lakeshore Dr.,
Thence along the centerline of Lakeshore Dr. and a curve to the left whose radius is 900.04 ft. a distance of 487.71 ft. (chord bearing and distance of N51°24'12"W 481.76 ft.),
Thence N66°55'36"W 286.22 ft. along the centerline of Lakeshore Dr.,
Thence along the centerline of Lakeshore Dr. and a curve to the right whose radius is 192.48 ft. a distance of 319.09 ft. (chord bearing and distance of N19°26'02"W 283.79 ft.),
Thence N28°02'32"E 167.08 ft. along the centerline of Lakeshore Dr.,
Thence along the centerline of Lakeshore Dr. and a curve to the left whose radius is 2473.71 ft. a distance of 231.63 ft. (chord bearing and distance of N25°22'35"E 231.55 ft.),
Thence along the centerline of Lakeshore Dr. and a curve to the left whose radius is 418.56 ft. a distance of 212.17 ft. (chord bearing and distance of N08°10'19"E 209.91 ft.),
Thence along the centerline of Lakeshore Dr. and a curve to the left whose radius is 321.39 ft. a distance of 164.35 ft. (chord bearing and distance of N20°59'57"W 162.56 ft.),
Thence N35°38'55"W 533.57 ft.,
Thence along the centerline of Lakeshore Dr. and a curve to the left whose radius is 1039.09 ft. a distance of 199.39 ft. (chord bearing and distance of N41°08'45"W 199.08 ft.),
Thence N46°38'34"W 300.10 ft. along the centerline of Lakeshore Dr.,
Thence along the centerline of Lakeshore Dr. and a curve to the left whose radius is 224.90 ft. a distance of 28.70 ft. (chord bearing and distance of N42°59'04"W 28.68 ft.),
Thence S88°49'33"W 174.61 ft.,
Thence N11°50'08"W 305.27 ft.,
Thence N88°49'33"E 317 ft. more or less to the waters edge of Pere Marquette Lake.

MID 006 016 919

Rule 525 Deed Notice

The Dow Chemical Company
Ludington, Michigan 49431
231 • 845-4411

THE DOW CHEMICAL COMPANY

WASTE MANAGEMENT DIVISION

February 14, 2002

FEB 19 2002

Mr. Clay Spencer
MI Department of Environmental Quality
Waste Management Division
Hazardous Waste Program Section
PO Box 30241
Lansing, MI 48909

CERTIFIED MAIL 7000 2870 0000 3350 9109

DEED NOTIFICATOIN FOR MID 006 016 919:

The attached deed notification has been filed and recorded with the Mason County Register of Deeds as required by Rule 299.9525 of Part 111, Hazardous Waste Management, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as ammended.

Rule 525 requires that all treatment, storage, and disposal facilities execute and file a notice wth the office of the register of deeds in the county in which the TSD is located. According to Jim Sygo's Letter of Warning dated December 18, 2001, this applies even if a former hazardous waste unit has been clean-closed and is now operating in "generator status."

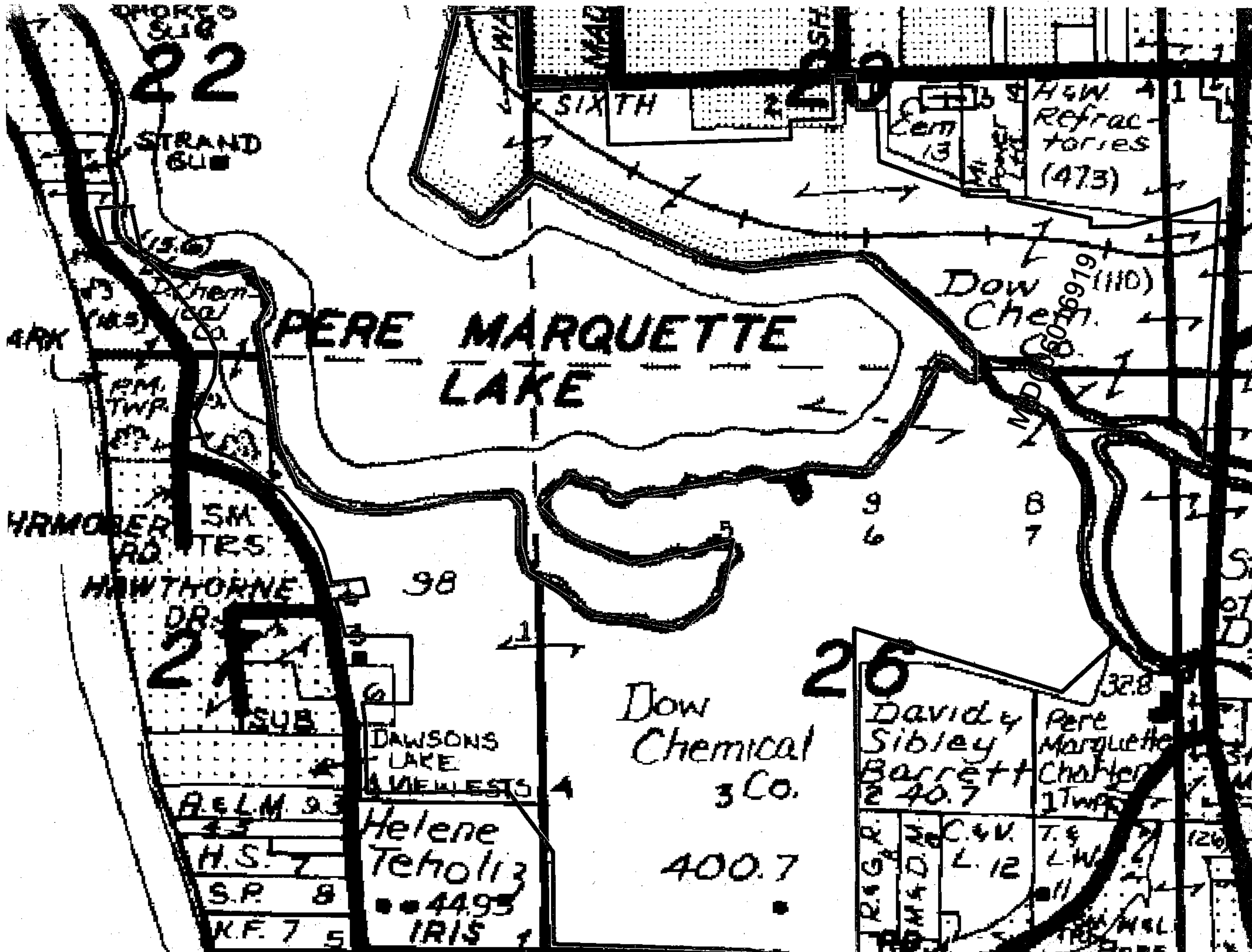
Please contact me if you have any questions regarding this notification.

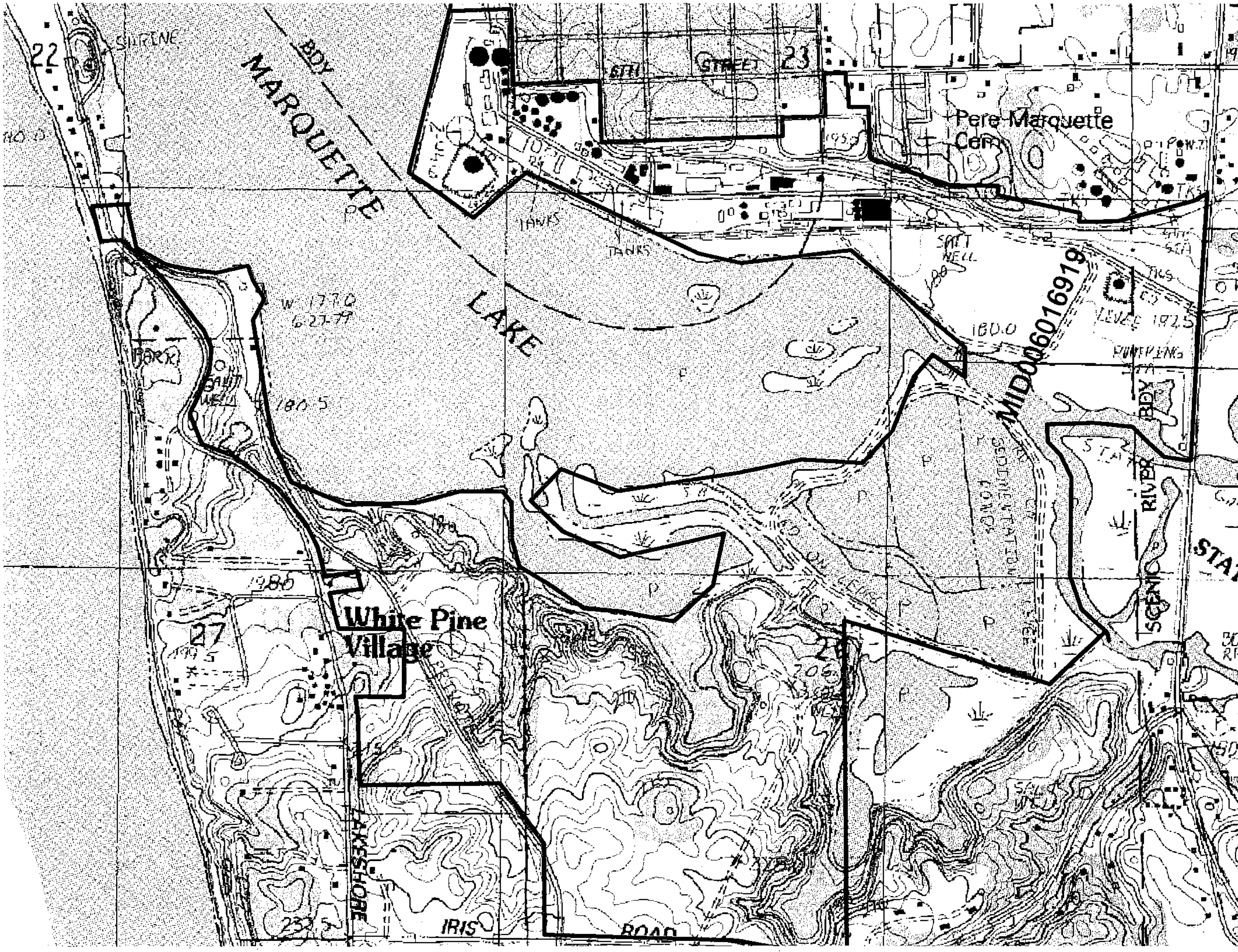
Gary C. Berk

Gary C. Berk
EH&S Specialist
111L Building
(231) 845-4219

GCB/ssl

Attachment


22
STRAND SUB
SIXTH
Cem 13
H&W Refractories (47.3)
Dow Chem. Co. (110)
PERE MARQUETTE LAKE
Dow Chemical Co.
400.7
26
David & Sibley Barrett 2 40.7
Pere Marquette Charter Twp.
C & V. L. 12
T. & L. W.
98
27
HAWTHORNE DR.
SM TES
SUB
DAWSONS LAKE VIEW ESTS
Helene Teholiz
44.95
IRIS
A. & L. M. 9.3
H. S.
S. P. 8
K. F. 7
MD0060169919


MID006016919
Pere Marquette Cem
SEDIMENTATION POND
SCENIC RIVER BDY
MARQUETTE
LAKE
BDY
White Pine Village
LAKESHORE
ROAD
IRIS
TANKS
SALT WELL
8TH STREET

STATE OF MICHIGAN

MD 006 016 919
Dow - Ludington

JOHN ENGLER, Governor

DEPARTMENT OF ENVIRONMENTAL QUALITY

HOLLISTER BUILDING, PO BOX 30473, LANSING MI 48909-7973

INTERNET: http://www.deq.state.mi.us

RUSSELL J. HARDING, Director

REPLY TO:

WASTE MANAGEMENT DIVISION
PO BOX 30241
LANSING MI 48909-7741

April 11, 1997

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Mr. Nathaniel R. Butler
Environmental Associate
The Dow Chemical Company
Environmental Services
1261 Building
Midland, MI 48667

Dear Mr. Butler:

SUBJECT: Termination of WMD Order No. 111-07-115-06-96

Enclosed please find a Notice of Termination of Consent Order WMD No. 111-07-115-06-96 between The Dow Chemical Company, and the Michigan Department of Environmental Quality. This termination became effective on the date it was signed by the Chief of the Waste Management Division.

Thank you for your cooperation in resolving this matter.

Sincerely,

for

JoAnn Merrick, Chief
Enforcement Section
Waste Management Division
517-373-7938

Enclosure

cc: Mr. Paul F. Novak, DAG
Ms. Joan Peck, DEQ
Mr. Ken Burda, DEQ
Mr. Edwin Haapala, DEQ - Saginaw
Mr. Philip Roycraft, DEQ - Cadillac
Mr. Benedict Okwumabua, DEQ - Livonia
Mr. Gary Tuma, DEQ

EQP 0100e
(Rev. 10/96)

STATE OF MICHIGAN
DEPARTMENT OF ENVIRONMENTAL QUALITY
WASTE MANAGEMENT DIVISION

In the matter of administrative proceedings
against The Dow Chemical Company, a
corporation organized under the laws of
the State of Delaware and doing business at
South Madison Street, City of Ludington,
County of Mason, State of Michigan,

EPA I.D. No. MID 006 016 919

and at 2314 Salzburg Road, Midland, MI 48667

Facility No. 56-000014, License No. 8227
EPA I.D. No. MID 980 617 435

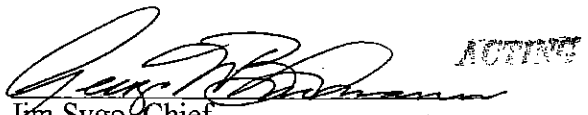
_____/

WMD Order No. 111-07-115-06-96

NOTICE OF TERMINATION

This Notice is issued pursuant to a request for termination submitted on February 20, 1997, by The Dow Chemical Company, pursuant to Section IX of WMD Order No. 111-07-115-06-96. The request contained supporting information as required by Section IX of WMD Order No. 111-07-115-06-96. Review of this request and the supporting information indicates that The Dow Chemical Company has achieved compliance with the terms and conditions of the Order.

Therefore, effective the date of issuance noted below, WMD Order No. 111-07-115-06-96 is terminated. Termination of this Order does not release The Dow Chemical Company of liability for any violations of law not specifically resolved by the Order. The Dow Chemical Company is hereby put on notice that the Department of Environmental Quality may pursue civil and/or criminal prosecution, including the assessment of monetary fines, for any such violation of Part 111 (Hazardous Waste Management) or Part 115 (Solid Waste Management) of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended, MCL 324.101 et seq., or other applicable law, as provided therein.

By: 
Jim Sygo, Chief
Waste Management Division

Date: April 2, 1997

STATE OF MICHIGAN

919

JOHN ENGLER, Governor

DEPARTMENT OF ENVIRONMENTAL QUALITY

"Better Service for a Better Environment"

CONSTITUTION HALL, 525 WEST ALLEGAN, PO BOX 30473, LANSING MI 48909-7973

INTERNET: www.deq.state.mi.us

RUSSELL J. HARDING, Director

REPLY TO:

WASTE MANAGEMENT DIVISION
PO BOX 30241
LANSING MI 48909-7741

December 18, 2001

DOW CHEMICAL CO
No Contact
1600 S MADISON AT 7TH
LUDINGTON, MI 49431

)W PLANT

SUBJECT: Letter of Warning

According to our records, recipients of this Letter of Warning have not complied with Rule 299.9525 of the administrative rules promulgated pursuant to Part 111, Hazardous Waste Management, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended. Rule 299.9525 became effective on September 11, 2000, and requires that all treatment, storage, and disposal facilities (TSDs) execute and file a notice with the office of the register of deeds in the county in which the TSD is located. A memorandum with a copy of the rule was sent out to all TSDs on October 19, 2000, explaining this rule (see enclosure).

Note that this rule applies to all TSDs that are subject to corrective action. It applies whether you have clean-closed your hazardous waste unit or not. It applies whether you have received a Part 111 operating license (at anytime in the past, or currently have an operating license) or even if you are "interim status." It also applies even if you are a former TSD and are now only operating in "generator" status or are not presently engaged in any hazardous waste activity.

Please submit verification of the execution, filing, and recording of the notice to the Michigan Department of Environmental Quality (MDEQ), Waste Management Division, Hazardous Waste Program Section, P.O. Box 30241, Lansing, Michigan, 48909, attention Mr. Clay Spencer by *(February 18, 2002)*. Failure to execute and file the notice may subject your facility to the enforcement provisions of Part 111, including the potential assessment of civil or criminal penalties.

This Letter of Warning does not preclude nor limit the MDEQ's ability to initiate any other enforcement action, under state or federal law, as deemed appropriate.

Also, please be aware that the rule requires owners or operators to provide a copy of the notice to new owners or operators. The rule also requires that new owners or operators provide notification to the director of the MDEQ of transfer of ownership or operational control of a facility. This notification must be made 90 days **before** scheduled changes in ownership or operational control of the facility. The MDEQ has been coordinating the tracking of compliance with this state requirement with the United States Environmental Protection Agency (U.S. EPA) as a condition for Voluntary Corrective Action Agreements and Prospective Purchaser Agreements.

STATE OF MICHIGAN

JOHN ENGLER, Governor

DEPARTMENT OF ENVIRONMENTAL QUALITY

"Better Service for a Better Environment"

HOLLISTER BUILDING, PO BOX 30473, LANSING MI 48909-7973

INTERNET: www.deq.state.mi.us

RUSSELL J. HARDING, Director

REPLY TO:

WASTE MANAGEMENT DIVISION
PO BOX 30241
LANSING MI 48909-7741

October 19, 2000

TO: All Michigan Hazardous Waste Treatment, Storage, and Disposal Facilities

SUBJECT: New Part 111 Rule 525 and Memorandum of Understanding (MOU) with the United States Environmental Protection Agency (U.S. EPA)

Rule 299.9525

The administrative rules promulgated pursuant to Part 111, Hazardous Waste Management, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended, were amended effective September 11, 2000. A notice of availability of these amended rules was previously sent to Treatment, Storage, and Disposal Facilities (TSDFs). The rules package contains many amendments based on both federally required and state initiated revisions. The Waste Management Division (WMD) website has these rules in Portable Document Format available at: http://www.deq.state.mi.us/pub/wmd/hazwaste/Part111Rules00.pdf.

One new rule, Rule 525, was described in a September 10, 1999 letter to all TSDFs and asked for a voluntary execution of a deed notice. This deed notice is now mandatory and applies both to facilities that have received a Part 111 Operating License and to facilities that are operating under "interim status." If you have any questions on Rule 299.9525 (copy enclosed), please contact Mr. Clay Spencer by telephone, at 517-373-7968, or via e-mail, at (spencerc@state.mi.us).

Please submit verification of the execution, filing, and recording of the notice to the Michigan Department of Environmental Quality (MDEQ), WMD, Hazardous Waste Program Section, P.O. Box 30241, Lansing, Michigan, 48909, attention Mr. Clay Spencer by November 10, 2000.

U.S. EPA MOU

The WMD has also been working with the U.S. EPA, Region 5 and Headquarters, to establish a MOU for utilizing state cleanup criteria for corrective action federal requirements. Enclosed for your information is a copy of the final draft of this document that should soon be signed by the U.S. EPA. As soon as this document has been signed, it will be available on the WMD website. If you have questions regarding this MOU draft document, please contact Ms. JoAnn Merrick, at 517-373-7938.

Sincerely,

Jim Sygo, Chief
Waste Management Division
517-373-2730

Enclosures

R 299.9525 Notice requirements

Rule 525. (1) An owner of a hazardous waste treatment, storage, or disposal facility shall execute and file a notice with the office of the register of deeds in the county in which the facility is located. The owner shall submit verification of the execution, filing, and recording of the notice to the department within 60 days of the effective date of this rule. The notice shall be titled "notice regarding statutory obligations applicable to property" and shall comply with all of the following requirements:

(a) The notice shall include a legal description of the land upon which the facility is located. The land and the facility shall be referred to as "the property."

(b) The notice shall state that the property has been used to manage hazardous waste and is subject to the corrective action requirements of part 111 of the act and RCRA, as amended by the 1984 hazardous and solid waste amendments.

(c) The form of the notice shall comply with the requirements of act 103 of the public acts of 1937, as amended, being §565.201 et seq. of the Michigan Compiled Laws.

(2) Owners or operators shall provide new owners or operators with a copy of the notice required pursuant to the provisions of subrule (1) of this rule.

(3) New owners or operators shall provide notice to the director of the transfer of ownership or operational control of a facility. The notification shall be provided to the director not later than 90 days before the scheduled change in ownership or operational control.

(4) The requirements of subrules (1) to (3) of this rule apply to both of the following:

(a) Owners or operators of hazardous waste treatment, storage, or disposal facilities which have been issued an operating license under part 111 of the act.

(b) Owners or operators of hazardous waste treatment, storage, or disposal facilities which have not yet been issued an operating license under part 111 of the act.

STATE OF MICHIGAN

CHRON

JOHN ENGLER, Governor

DEPARTMENT OF ENVIRONMENTAL QUALITY

HOLLISTER BUILDING, PO BOX 30473, LANSING MI 48909-7973

RUSSELL J. HARDING, Director

REPLY TO:

WASTE MANAGEMENT DIVISION
PO BOX 30241
LANSING MI 48909-7741

April 26, 1996

Mr. Mike Ridder
The Dow Chemical Company
Dow USA
South Madison Street
Ludington, MI 49431

Dear Mr. Ridder:

SUBJECT: Regulatory Status of Waste Streams from Kiln Operations: The Dow Chemical Company, Ludington, EPA I.D. No. MID 006 016 919, and; The Salzburg Facility, Midland, Facility No. 56-000014, License No. 8227, EPA I.D. No. MID 980 617 435.

The U.S. Environmental Protection Agency (EPA) has reviewed the arguments and issues raised by The Dow Chemical Company (Dow) during the settlement discussions held on February 7, 1996. The EPA has determined that the spent furnace bricks generated by Dow are not uniquely associated with mining or mineral processing and are therefore not subject to the Bevill exclusion. (See enclosed letter dated April 12, 1996.)

Given the EPA's concurrence with the MDEQ's position regarding the regulatory status of the chrome bricks and Dow's commitment to the resolution of the remaining issues set forth in the Notice of Violation, the MDEQ would like to move forward towards a settlement. To that end, I suggest that Dow review the revised draft Consent Order (enclosed) and make comments as necessary. Following your response, the document will be revised as appropriate and a meeting scheduled to discuss costs and penalties. It would be helpful if Dow would furnish a suggested agenda prior to the meeting and be prepared to make a settlement offer. Please feel free to contact me with any questions you may have.

Sincerely,

Gary S. Tuma
Waste Management Division
517-335-4689

Enclosures

cc: Mr. Paul Novak, DAG
Mr. Ken Burda MDEQ
Mr. Edwin Haapala/Mr. Robert Wolfe, MDEQ-Saginaw/Bay
Mr. Philip Roycraft/Mr. Jim McLaughlin, MDEQ-Cadillac

EQP 0100-09e
(10/95)

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

REPLY TO THE ATTENTION OF:

HRE-8J

September 30, 1992

Mr. Mike Ryder
Dow Chemical Company
South Madison Street
Ludington, Michigan 49431

Re: Visual Site Inspection
Dow Chemical Company
Ludington, Michigan
MID 006 016 919

Dear Mr. Ryder:

The United States Environmental Protection Agency (U.S. EPA) Region V will conduct a Preliminary Assessment including a Visual Site Inspection (PA/VSI) at the referenced facility. This inspection is conducted pursuant to the Resource Conservation and Recovery Act, as amended (RCRA) Section 3007 and the Comprehensive Environmental Response, Compensation, and Liability Act, as amended (CERCLA) Section 104(e). The referenced facility has generated, treated, stored, or disposed of hazardous waste subject to RCRA. The PA/VSI requires identification and systematic review of all solid waste streams at the facility. The objective of the PA/VSI is to determine whether or not releases of hazardous wastes or hazardous constituents have occurred or are occurring at the facility which may require further investigation. This analysis will also provide information to establish priorities for addressing any confirmed releases.

The visual site inspection of your facility is to verify the location of all solid waste management units (SWMUs) and areas of concern (AOCs) to make a cursory determination of their condition by visual observation. The definitions of SWMUs and AOCs are included in Attachment I. The VSI supplements and updates data gathered during a preliminary file review. During this site inspection, no samples will be taken. A sampling visit to ascertain if releases of hazardous waste or constituents have occurred may be required at a later date.

Assistance of some of your personnel may be required in reviewing solid waste flow(s) or previous disposal practices. The site inspection is to provide a technical understanding of the present and past waste flows and handling, treatment, storage, and disposal practices. Photographs of the facility are necessary to document the condition of the units at the facility and the waste management practices used.

The VSI has been scheduled for October 13, 1992 at 8:30 a.m. The inspection team will consist of Manoj Mishra and Celeste Brancel of PRC Environmental Management, Inc., a contractor for the U.S. EPA. Representatives of the Michigan Department of Natural Resources (MDNR) may also be present. Your cooperation in admitting and assisting them while on site is appreciated.

The U.S. EPA recommends that personnel who are familiar with present and past manufacturing and waste management activities be available during the VSI. Access to any relevant maps, diagrams, hydrogeologic reports, environmental assessment reports, sampling data sheets, environmental permits (air, NPDES), manifests and/or correspondence is also necessary, as such information is needed to complete the PA/VSI.

If you have any questions, please contact me at (312) 886-4448 or Francene Harris at (312) 886-2884. A copy of the Preliminary Assessment/Visual Site Inspection Report, excluding the conclusions and Executive Summary portion will be sent when the report is available.

Sincerely yours,

Kevin M. Pierard, Chief
OH/MN Technical Enforcement Section

Enclosure

cc: Ken Burda, MDNR, Lansing
Dennis Drake, MDNR, Lansing
Jim McLaughlin, Cadillac

ATTACHMENT I

The definitions of solid waste management unit (SWMU) and area of concern (AOC) are as follows.

A SWMU is defined as any discernable unit where solid wastes have been placed at any time from which hazardous constituents might migrate, regardless of whether the unit was intended for the management of a solid or hazardous waste.

The SWMU definition includes the following:

- RCRA regulated units, such as container storage areas, tanks, surface impoundments, waste piles, land treatment units, landfills, incinerators, and underground injection wells
- Closed and abandoned units
- Recycling units, wastewater treatment units, and other units that U.S. Environmental Protection Agency has generally exempted from standards applicable to hazardous waste management units
- Areas contaminated by routine and systematic releases of wastes or hazardous constituents, such as wood preservative treatment dripping areas, loading or unloading areas, or solvent washing areas

An AOC is defined as any area where a release to the environment of hazardous wastes or constituents has occurred or is suspected to have occurred on a nonroutine or nonsystematic basis. This includes any area where such a release in the future is judged to be a strong possibility.

PRC requests that, if available, the following facility information be provided during the VSI:

1. Two copies of a detailed map of the facility
2. Facility history, including dates of operation, ownership changes, and production processes
3. Current facility operations
4. Processes that generate waste that is treated, stored, or disposed of at the facility
5. Records of disposal of wastes generated at the facility (manifests, annual reports, etc...)
6. Security at the facility
7. Information regarding geology and the uses of ground water and surface water in the area
8. Permits (air, NPDES, etc...) the facility currently holds or has held in the past and documentation of any permit violations that may have occurred
9. Records of any spills that may have occurred at the facility
10. Descriptive operational information (location, dimensions, capacity, materials of construction, etc...), dates of start-up and closure, wastes managed, release controls, and release history for each SWMU

Dow Roycraft
Ludington C&E file

xxxxxxxxxxxxxxxxxxxx
Gordon E. Guyer, Director

Roscommon, Michigan 48653
Region II
November 25, 1986

Ben Baker, Manager
Environmental Services
Dow Chemical Company, Ludington Plant
S. Madison and Seventh
Ludington, MI 49431

Dear Mr. Baker:

RE: Closure - #MID 006016919

This office is in receipt of your letter of November 13, 1986, with the following attachments:

1) Soil sampling analytical results.

2) Certification of closure activity by an independent certified professional engineer.

3) Notification of change of status.

It appears that these documents complete the closure requirements for extraction of the former underground solvent storage tank at your facility. Therefore closure is considered complete and your facility will now be regulated as a generator of hazardous waste under Michigan's Hazardous Waste Management Act (P.A. 1979, as amended).

Enclosed for your information is a copy of my field report regarding this matter.

Sincerely,

AS

Andrea G. Stewart
Environmental Quality Analyst
HAZARDOUS WASTE DIVISION
(517) 275-5151

HAZ.WASTE DIV

3 DEC 86 2:15

AGS:plc

cc Roycraft

PERMIT UNIT

RCRA Inspection Report

EPA Identification Number: M I D 0 0 6 0 1 6 9 1 9

Installation Name: DOW CHEMICAL CO. - LUDINGTON PLANT

Location Address: S. MADISON AND SEVENTH

City: LUDINGTON State: MI

Date of inspection: 10-02-86 Time of inspection (from) _____ (to) _____

Person(s) interviewed	Title	Telephone
BEN BAKER	MGR. ENVIRON. SERVICES	(616) 845-4390

Inspector(s)	Agency/Title	Telephone
ANDREA STEWART	MDNR EQA	(517) 373-5151

Installation Activity (mark only one box) Inspection Form #

I	Treatment/Storage/Disposal per 40 CFR 265.1 and/or Generation and/or Transportation	A
I	Treatment/Storage/Disposal (no generation or Transportation)	A
I	Generation and Transportation	B, C
I	Generation only	B
I	Transportation only	C

CLOSURE

DEPARTMENT OF NATURAL RESOURCES

HAZARDOUS WASTE DIVISION

FIELD REPORT

☐ Complaint Inspection
☐ Compliance Inspection
☐ PEAS Investigation
☐ PCB Report/Complaint

☐ Act 64 _____
☐ Act 136 _____
☐ Act 245 _____
☒ RCRA CLOSURE

Date	Time
10-2-86	

Company/Facility	Facility No.
Dow Chemical Company	MID 006016919

	City	Staff
S. Madison & 7th	Ludington	A. Stewart

Participants
Stewart, Baker, Montgomery, McDowell

REMARKS:

Observed removal of 1000-gallon underground tank formerly used for waste solvent (1,1,1-Trichloroethane). The tank was used in 1980-81; discontinued in August, 1981. Extraction was supervised by Ben Baker, Manager of Environmental Services for Dow. Actual sampling as done by Eric Montgomery of Aquatic Systems in Ludington. Samples will be analyzed at Dow's labs in Midland. Bob McDowell of McDowell & Associates in Ferndale was present to certify removal. The tank appeared to be in good shape and no obvious solent odor was detected from either tank or soil. Samples were taken with a 4-inch auger from mostly undisturbed soil. Sample locations were in accordance with closure plan (with exception of #6, taken at side of end of tank rather than in middle of end). See atached diagram of sampling locations and explanation of analytical method. Mr. Baker wil submit sampling results when available. If hazardous constituents are not detected in soil, certification of extraction and change of status request to generator only will be submitted to EPA to complete closure.

cc EPA
Baker

Distribution: Original — District File
1st Copy — Lansing

ATTACHMENT IV

SAMPLING AND ANALYSIS PLAN FOR CLOSURE OF AN UNDERGROUND TANK
AT EPA FACILITY ID NUMBER MID 006016919

Sample	Sampling Method	Sample Type	Analytical Method
Soil samples #1 and #2	ASTM D1452-65 samples will be collected using a tulip bulb planter to obtain cores. About 10 grams from each sample will then be collected and composited. Two replicates from each composite will be collected.	Field composited samples will be collected in a glass container with Teflon lined cap. Bottle size will be selected to minimize vapor head space above sample. Sample will be cooled to 4°C and shipped to Midland for analysis at Dow's Analytical Laboratories.	Infrared (IR) spectrophotometry with carbon disulfide used as a solvent.
Soil samples #2 through #6, inclusive	Same as above.	Same as above.	Same as above.
Soil samples #7 through #10, inclusive	Same as above.	Same as above.	Same as above.

Rationale for Sampling and Analytical Plan

This sampling and analytical plan is intended to determine whether hazardous constituents, specifically 1,1,1-trichloroethane, is present in the soil around the storage tank at the bottom, the mid-way point, or at the top of the tank around the fill pipe. Composite samples will be collected at these three elevations and analyzed by IR spectrophotometry to determine the soil conditions. IR spectrophotometry is sensitive from a range of one (1) to one hundred (100) parts per million. This method is proposed based on the fact that this compound is relatively non-toxic both from a fish and mammalian toxicity standpoint (see EPA's Background Document to Support the Notice of Proposed Rulemaking Pursuant to CERCLA Section 102(6), May 1983, by Rockwell International, Contract No. 68-03-3014) and because contamination, if it is present at all due to a spill or tank failure, would be detected from a release as small as one pound. (The CERCLA reportable quantity for 1,1,1-trichloroethane is 1,000 pounds.)

Quality Assurance

An additional separate sample will be collected from the mid-point elevation of the excavation in a similar manner to the other samples. This sample will be spiked to a ten (10) parts per million concentration and analyzed along with the other three (3) composite samples. In this manner, both the matrix specific sensitivity and the data quality can be verified.

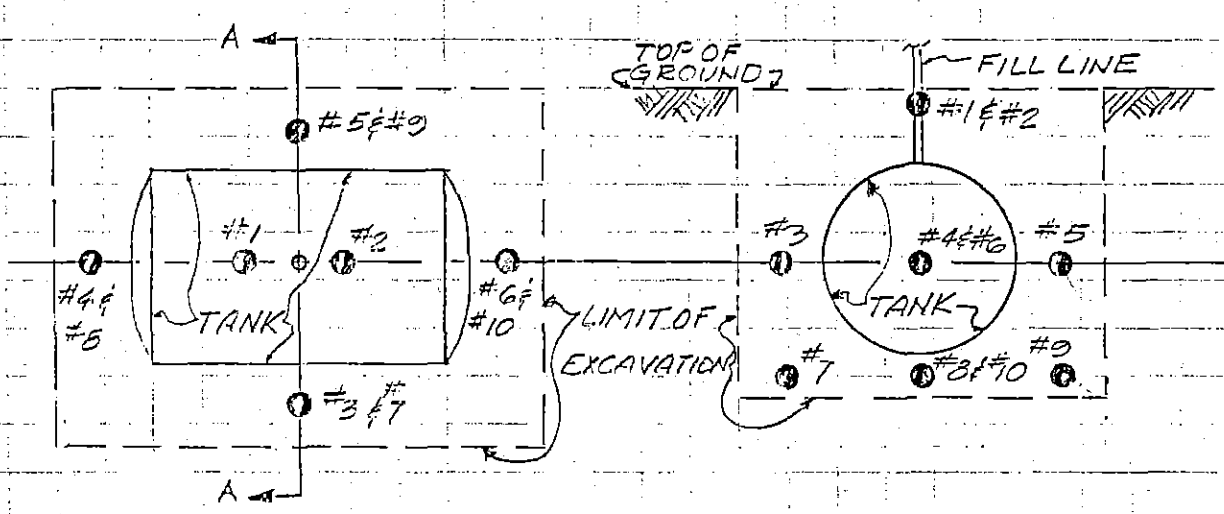
DOW CHEMICAL CO., U.S.A., LUDINGTON

RCRA CLOSURE - EPA FACILITY MID006016915

JOB NO.	SHEET	FILE	BY	DATE
	1 OF 1		CRD	12/18/85

ATTACHMENT III

SAMPLING LOCATION PLAN
UNDERGROUND WASTE STORAGE TANK



PLAN VIEW — SECTION A-A

NOT TO SCALE

KEY

● - DENOTES SOIL SAMPLE LOCATION

NOTES:

① THIS ATTACHMENT IS ONE OF FOUR ATTACHMENTS, TOTAL.

② SAMPLE COLLECTION, PRESERVATION AND ANALYSES WILL BE PERFORMED PER ATTACHMENT IV OF THIS PACKAGE

Dow Ludington
c & e file

DOW CHEMICAL U.S.A.

November 13, 1986

LUDINGTON, MICHIGAN 49431
616 - 845-4411

Mr. Basil G. Constantelos, Director
Waste Management Division
U.S. Environmental Protection Agency
Region V
Chicago, Il. 60609

Dear Mr. Constantelos:

SUBJECT: **CLOSURE OF RCRA INTERIM STATUS FACILITY**
EPA ID NUMBER MID006016919

This is to notify you that we have completed closure of our underground storage tank used for F001 waste material, in accordance with the closure plan approved by you in a letter dated May 19, 1986.

During the removal of the tank an observer from the Michigan Department of Natural Resources was present, in addition to an independent certified professional engineer.

Attached is his certification letter and a change of status form, indicating we are no longer a storage facility but generator of hazardous waste.

Sincerely,

B.F. Baker, Manager
Environmental Services
Ludington Site
(616) 845-4390

jm

Attachment

cc: Phil Roycraft, MIDNR
Andrea Stewart, MIDNR

IAZ.WASTE DIV

18 NOV 86 2: 05

ATTACHMENT I

SAMPLE ANALYSIS FOR 1,1,1 - TRICHLORETHANE

Composite of Soil Samples	Analytical Result
1 and 2	ND (1 PPM)
3, 4, 5 and 6	ND (1 PPM)
7, 8, 9, 10	ND (1 PPM)

NOTE: 85% recovery of the 10 PPM 1,1,1 - trichlorethane spiked sample was obtained.

BB/jm

McDOWELL & ASSOCIATES
10659 Galaxie
Ferndale, Michigan 48220
Phone: 313-399-2066

October 28, 1986

Dow Chemical Company
Building 4
S. Madison Street
Ludington, Michigan 49431

Job No. 86-250

Attention: Mr. Ben Baker

Subject: Engineering Certification
E.P.A. Facility
I.D. No. MID-006016919
Dow Chemical Company
Ludington, Michigan

Gentlemen:

In accordance with your request, I have reviewed the closure of the subject facility. This is a tank used for the storage of F001. I witnessed the tank removal and related testing.

I certify that this is in accordance with Dow's EPA Approved Closure Plan described in Dow's December 19, 1985 and January 31, 1986 letters to the Environmental Protection Agency, and the requirements of 40CFR 265.115.

If we can be of any further service, please feel free to call.

Very truly yours,

McDOWELL & ASSOCIATES

Robert McDowell, P.E.

RMcD/lms

STATE OF MICHIGAN
ROBERT
McDOWELL
NO.
15372
REGISTERED PROFESSIONAL ENGINEER

Please print or type with ELITE type (12 characters/inch) in the unshaded areas only.

GSA No. 0246-EPA-OT

U.S. ENVIRONMENTAL PROTECTION AGENCY
NOTIFICATION OF HAZARDOUS WASTE ACTIVITY

INSTALLATION'S EPA I.D. NO.

I. NAME OF INSTALLATION

II. INSTALLATION MAILING ADDRESS

III. LOCATION OF INSTALLATION

PLEASE PLACE LABEL IN THIS SPACE

INSTRUCTIONS: If you received a preprinted label, affix it in the space at left. If any of the information on the label is incorrect, draw a line through it and supply the correct information in the appropriate section below. If the label is complete and correct, leave items I, II, and III below blank. If you did not receive a preprinted label, complete all items. "Installation" means a single site where hazardous waste is generated, treated, stored and/or disposed of, or a transporter's principal place of business. Please refer to the INSTRUCTIONS FOR FILING NOTIFICATION before completing this form. The information requested herein is required by law *(Section 3010 of the Resource Conservation and Recovery Act).*

DETACH

FOR OFFICIAL USE ONLY

COMMENTS: C

INSTALLATION'S EPA I.D. NUMBER: F M I D 0 0 6 0 1 6 9 1 9 (T/A) C 1

APPROVED:

DATE RECEIVED (yr., mo., & day):

I. NAME OF INSTALLATION

DOW CHEMICAL COMPANY LUDINGTON PLANT

II. INSTALLATION MAILING ADDRESS

STREET OR P.O. BOX: 3 SOUTH MADISON & SEVENTH

CITY OR TOWN: 4 LUDINGTON

ST.: MI

ZIP CODE: 49431

III. LOCATION OF INSTALLATION

STREET OR ROUTE NUMBER: 5 SOUTH MADISON & SEVENTH

CITY OR TOWN: 6 LUDINGTON

ST.: MI

ZIP CODE: 49431

IV. INSTALLATION CONTACT

NAME AND TITLE *(last, first, & job title)*: 2 BAKER BEN ENVIRON MANAGER

PHONE NO. *(area code & no.)*: 616-845-4390

V. OWNERSHIP

DETACH

A. NAME OF INSTALLATION'S LEGAL OWNER: 8 DOW CHEMICAL COMPANY U.S.A.

B. TYPE OF OWNERSHIP *(enter the appropriate letter into box)*: M

F = FEDERAL
M = NON-FEDERAL

VI. TYPE OF HAZARDOUS WASTE ACTIVITY *(enter "X" in the appropriate box(es))*

- [X] A. GENERATION
- [ ] B. TRANSPORTATION *(complete item VII)*
- [ ] C. TREAT/STORE/DISPOSE
- [ ] D. UNDERGROUND INJECTION

VII. MODE OF TRANSPORTATION *(transporters only – enter "X" in the appropriate box(es))*

- [ ] A. AIR
- [ ] B. RAIL
- [ ] C. HIGHWAY
- [ ] D. WATER
- [ ] E. OTHER *(specify):*

VIII. FIRST OR SUBSEQUENT NOTIFICATION

Mark "X" in the appropriate box to indicate whether this is your installation's first notification of hazardous waste activity or a subsequent notification. If this is not your first notification, enter your Installation's EPA I.D. Number in the space provided below.

- [ ] A. FIRST NOTIFICATION
- [X] B. SUBSEQUENT NOTIFICATION *(complete item C)*

C. INSTALLATION'S EPA I.D. NO.: M I D 0 0 6 0 1 6 9 1 9

IX. DESCRIPTION OF HAZARDOUS WASTES

Please go to the reverse of this form and provide the requested information.

Dc → CLE file, Dow Ludington

DOW CHEMICAL U.S.A.

LUDINGTON, MICHIGAN 49431

616 · 845-4411

September 25, 1986

Ms. Carol Witt, Geologist
Technical Program Section 5H S-13
Solid Waste Branch
U.S. EPA - Region V
230 South Dearborn Street
Chicago, IL 60604

Mr. Philip Roycraft
Hazardous Waste Division
Michigan DNR
Steven T. Mason Building
P.O. Box 30022
Lansing, MI 48909

SUBJECT: CLOSURE OF INTERIM STATUS FACILITY - ID NUMBER MID 006016919

As requested in the approval letter, dated May 19, 1986, of our closure plan for our underground storage tank, I am hereby notifing you of our intent to commence removal of this tank on October 2, 1986.

If you have any questions regarding this matter, please contact me at (616) 845-4390.

Sincerely,

Ben Baker

Ben Baker, Manager
Environmental Services
Ludington Site

cc: Andrea Stewart, MI DNR Roscommon

RECEIVED
SEP 30 1986
HAZARDOUS WASTE DIV.

xc: ~~Del~~ Ken
~~Al~~ Chuck
John/Dist: ~~Joan~~
Original: CSE

5HS-13-JCK

19 MAY 1986

CERTIFIED MAIL
RETURN RECEIPT REQUESTED
Mr. G. R. Veurink
Manager, Environmental Services
DOW Chemical U.S.A.
628 Building
Midland, MI 48640

RE: Closure Plan
DOW Chemical
Ludington, MI
MID 006 016 919

Dear Mr. Veurink:

We are hereby approving your December 19, 1985 revised closure plan, and January 31, 1986 additional information, for the underground storage tank at the above-referenced facility. When excavation and soil sampling begins, please notify the United States Environmental Protection Agency and the Michigan Department of Natural Resources (MDNR). When closure is completed, please submit (1) the certifications required by 40 CFR 265.115, (2) documentation that a clean closure has been achieved following the closure plan, and (3) a certification signed by a responsible corporate officer indicating a change in status to that of a generator storing less than 90 days, per 40 CFR 270.11.

If you have any questions regarding this matter, please contact Ms. Carol Witt of my staff, at (312) 886-6146 or Mr. Philip Roycraft of the MDNR at (517) 373-2730, for assistance.

Sincerely,

Basil G. Constantelos, Director
Waste Management Division

cc: Alan J. Howard, MDNR
Philip Roycraft, MDNR

RECEIVED
MAY 22 1986
HAZARDOUS WASTE DIV.

C & E File

STATE OF MICHIGAN

JAMES J. BLANCHARD, Governor

DEPARTMENT OF NATURAL RESOURCES

STEVENS T. MASON BUILDING
BOX 30028
LANSING, MI 48909

RONALD O. SKOOG, Director

March 11, 1986

Ms. Edith M. Ardiente, P.E., Chief
Technical Programs Section
U.S. EPA - Region V
230 S. Dearborn
Chicago, Illinois 60604

Re: Closure Plan
Dow Chemical Company, Ludington
MID006016919

Dear Ms. Ardiente:

We have received the addendums to the aforementioned closure plan dated January 31, 1986. We have no additional comments on the plan, and recommend that it now be approved.

If you have any questions on the plan, please contact me.

Sincerely,

Philip R. Roycraft
Technical Services Section
Hazardous Waste Division
517-373-2730

cc: Mr. Tom Polasek
Ms. Mary Higgins
Ms. Carol Witte
Mr. Ken Burda/C&E File

cc: Del
Al
John/Dist.
Chuck
Joan

Original: Ken

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
230 SOUTH DEARBORN ST.
CHICAGO, ILLINOIS 60604

REPLY TO THE ATTENTION OF:
5HS-JCK-13

FEB 05 1986

Mr. Alan J. Howard, Chief
Technical Services Section
Hazardous Waste Division
Michigan Department of Natural Resources
P.O. Box 30028
Lansing, Michigan 48909

RE: Closure Plan Additional Info.
Dow - Ludington
Ludington, MI
MID 006016 919

Dear Mr. Howard:

Enclosed is/are one (1) copy(s) of a closure plan additional info. for the referenced facility. Please perform a technical evaluation of the ~~plan~~ additional info., and provide us your comments by March 6, 1986.

If you have any questions on the closure plan additional info., please contact Carol Witt of my staff, at (312) 886-6176.

Sincerely,

Edith M. Ardiente

Edith M. Ardiente, P.E.
Chief, Technical Programs Section

Enclosure(s)

cc: Mary Murphy

AZ.WASTE DIV

FEB 86 18 18

SFL-5

FEB 05 1986

DOW CHEMICAL U.S.A.

MICHIGAN DIVISION
MIDLAND, MICHIGAN 48640

January 31, 1986

FEDERAL EXPRESS

RECEIVED
FEB 03 1986
SOLID WASTE BRANCH
U.S. EPA, REGION V

Ms. Carol Witt, Geologist
Technical Program Section, 5HS-13
Solid Waste Branch
U.S. EPA - Region V
230 South Dearborn Street
Chicago, IL 60604

Dear Ms. Witt:

SUBJECT: FOLLOW-UP INFORMATION ON INTERIM STATUS CLOSURE FOR EPA FACILITY ID NUMBER MID 006016919

As per our December 18, 1985 letter, please find enclosed responses to items 1, 2, and 9 from your November 14, 1985 letter as Attachments I, II, and III, respectively. In addition, regarding your request for clarification of Mr. Hannegan's November 7, 1980 letter to EPA, this unit is an oil fired boiler used for on-site steam generation. Additional information regarding this boiler is provided under separate cover in our response to your RCRA Section 3004(u) information request and in our RCRA Section 3010 notification required for this unit in the November 29, 1985 Federal Register at page 49164.

Should you have any questions regarding this matter, please contact Mr. Craig Doolittle at (517)636-3874.

Sincerely,

J. M. Rio, Manager
Environmental Services
628 Building
(517)636-2646

clr

Enclosures

ATTACHMENT I

ENGINEERING DESCRIPTION OF TANK

The underground waste solvent storage tank is a horizontal, cylindrical tank approximately four (4) feet in diameter and eight (8) feet long. The tank is fabricated out of 0.125 inch thick mild steel and is tar/epoxy coated for corrosion protection. The top of the tank is approximately four (4) feet below grade and was installed in a natural soil excavation, with sand backfill and a several inch thick concrete slab poured on top of the tank to prevent hydrostatic uplift.

The tank is equipped with a three (3) inch diameter fill line which has a fabricated steel splash box about one (1) foot by one (1) foot by six (6) inches, built around the spout to prevent spillage.

DRILL LOG

ATTACHMENT II

ATURE Dow Chemical Co. Storage Tank Closure Area HOLE NO. 1

CATION Dow Chemical Plant GROUND ELEV. CASING ELEV None

GGED BY Dave Skrocki / Aquatic Systems, Inc. CONTRACTOR Dow Chemical DRILL TYPE Hand Auger

GUN 10:00 A.M. FINISHED 11:00 A.M. TOTAL DEPTH 12.2'

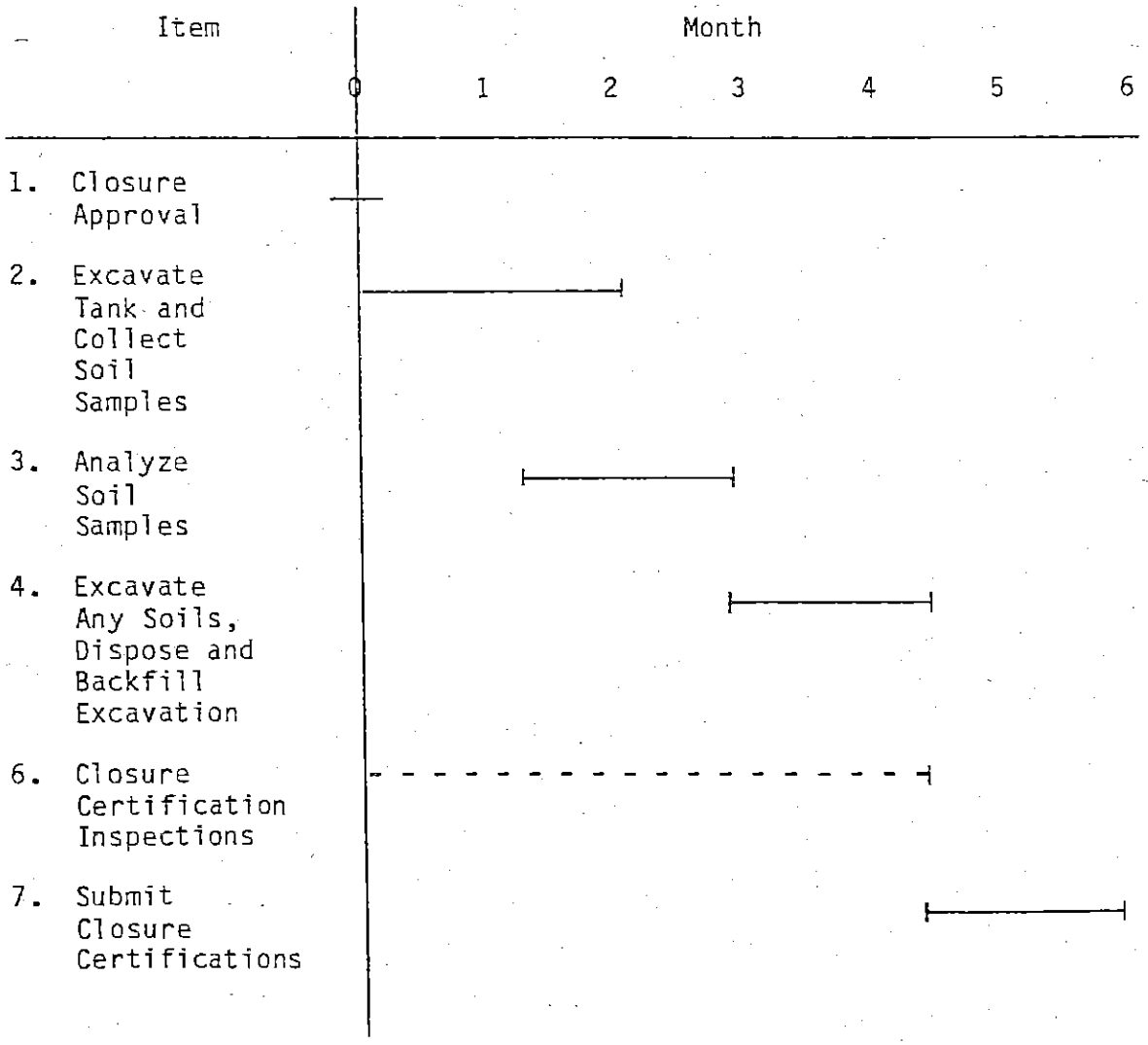
TER TABLE 12' DATE 1/23/86

DEPTH	LOG	SAMPLE	VISUAL CLASSIFICATION AND DESCRIPTION	DRILLING INFORMATION AND REMARKS
			Road Gravel	6"
1			Dark grey, organic rich, well sorted, fine grained sand. Light grey	1.7'
2			Dark orange brown, iron oxide, rich, well sorted, fine grained sand	2.8'
3			Light brown, well sorted fine grained sand	3.8'
4			Tan, clean, well sorted, fine grained sand	
5				Minor iron oxide staining and organic matter noticed throughout the core.
6				
7				7.3'
8			Tan to pinkish	
9				9.4'
10			Light grey	
11				11.3'
12			Light brown	Groundwater table 12.2' E.O.B.
13				
14				

NOTES

ATTACHMENT III

CLOSURE SCHEDULE
FOR UNDERGROUND WASTE TANK



CE File
Dow Ludington

xc: Del
Al
John/Dist.
Ken
Chuck
Joan

Original: [illegible]

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
230 SOUTH DEARBORN ST.
CHICAGO, ILLINOIS 60604

REPLY TO THE ATTENTION OF:
5HS-13

JAN 02 1986

Mr. Alan J. Howard, Chief
Technical Services Section
Hazardous Waste Division
Michigan Department of Natural Resources
P.O. Box 30028
Lansing, Michigan 48909

RE: Closure Plan additional info.
Dow Chemical Company
Ludington, MI
MIB 006 016 919

Dear Mr. Howard:

Enclosed is/are one (1) copy(s) of a closure plan additional info. for the referenced facility. Please perform a technical evaluation of the ~~plan~~ info., and provide us your comments by February 12, 1986.

If you have any questions on the closure plan additional info., please contact Carol Witt of my staff, at (312) 886-6146.

Sincerely,

Edith M. Ardiente

Edith M. Ardiente, P.E.
Chief, Technical Programs Section

Enclosure(s)

cc: Mary Higgins
HWDMS Update File

HAZ. WASTE DIV*

6 JAN 86 1: 20

SFL-5

JAN 02 1986

xc: Del Al John/Dist. Ken Chuck Joan

DOW CHEMICAL U.S.A. Original: _____

MICHIGAN DIVISION
MIDLAND, MICHIGAN 48640

December 19, 1985

CERTIFIED MAIL

RECEIVED
DEC 27 1985
SOLID WASTE BRANCH
U.S. EPA, REGION V

Ms. Carol Witt, Geologist
Technical Program Section, 5HS-13
Solid Waste Branch
U.S. EPA - Region V
230 South Dearborn Street
Chicago, IL 60604

Dear Ms. Witt:

SUBJECT: ADDITIONAL INFORMATION FOR CLOSURE OF INTERIM STATUS
FACILITY ID NUMBER MID 006016919 C TSD, PA, S

In response to your letter dated November 14, 1985, enclosed please find as Attachments I through IV, supplemental information requested in that letter. This submittal is a partial submittal and Dow hereby requests an extension until January 31, 1986 for submittal of information clarifying Mr. Don Hannegan's November 7, 1980 letter to EPA and for responses to Items 1 and 2 in the enclosure to your November 14, 1985 letter.

Should you have any questions regarding this, please contact Mr. Craig Doolittle at (517)636-3874.

Sincerely,

J. M. Rio, Manager
Environmental Services
628 Building
(517)636-2646

clr

Enclosures (4)

12.WASTE DIV

JAN 86 1: 19

ATTACHMENT I

RESPONSE AND ADDITIDNAL INFORMATION PERTAINING TO U.S. EPA'S NOVEMBER 14, 1985 LETTER TO DOW CONCERNING PROPOSED CLOSURE ACTIVITIES AT EPA FACILITY MID 006016919

Enclosure Item	Response
1	To be submitted by January 31, 1986.
2	To be submitted by January 31, 1986.
3	See Attachment II. Two maps included which were originally submitted with the RCRA Part A permit application for this facility.
4	Deleted per conversation with Ms. Carol Witt on November 20, 1985.
5	See 6 below.
6	See Attachment III.
7	See Attachment IV.
8	As per our November 20, 1985 conversation with Ms. Carol Witt, soil contaminated above detectable levels will be packaged and shipped to Dow's Michigan Division for incineration in our hazardous waste incinerator.
9	As indicated in our November 2D, 1985 conversation, Dow fully intends to comply with the Closure Performance Standards of 40 CFR 265.111(b).

ATTACHMENT IV

SAMPLING AND ANALYSIS PLAN FOR CLOSURE OF AN UNDERGROUND TANK
AT EPA FACILITY ID NUMBER MID D06016919

Sample	Sampling Method	Sample Type	Analytical Method
Soil samples #1 and #2	ASTM D1452-65 samples will be collected using a tulip bulb planter to obtain cores. About 10 grams from each sample will then be collected and composited. Two replicates from each composite will be collected.	Field composited samples will be collected in a glass container with Teflon lined cap. Bottle size will be selected to minimize vapor head space above sample. Sample will be cooled to 4°C and shipped to Midland for analysis at Dow's Analytical Laboratories.	Infrared (IR) spectrophotometry with carbon disulfide used as a solvent.
Soil samples #2 through #6, inclusive	Same as above.	Same as above.	Same as above.
Soil samples #7 through #10, inclusive	Same as above.	Same as above.	Same as above.

Rationale for Sampling and Analytical Plan

This sampling and analytical plan is intended to determine whether hazardous constituents, specifically 1,1,1-trichloroethane, is present in the soil around the storage tank at the bottom, the mid-way point, or at the top of the tank around the fill pipe. Composite samples will be collected at these three elevations and analyzed by IR spectrophotometry to determine the soil conditions. IR spectrophotometry is sensitive from a range of one (1) to one hundred (100) parts per million. This method is proposed based on the fact that this compound is relatively non-toxic both from a fish and mammalian toxicity standpoint (see EPA's Background Document to Support the Notice of Proposed Rulemaking Pursuant to CERCLA Section 102(6), May 1983, by Rockwell International, Contract No. 68-03-3014) and because contamination, if it is present at all due to a spill or tank failure, would be detected from a release as small as one pound. (The CERCLA reportable quantity for 1,1,1-trichloroethane is 1,000 pounds.)

Quality Assurance

An additional separate sample will be collected from the mid-point elevation of the excavation in a similar manner to the other samples. This sample will be spiked to a ten (10) parts per million concentration and analyzed along with the other three (3) composite samples. In this manner, both the matrix specific sensitivity and the data quality can be verified.

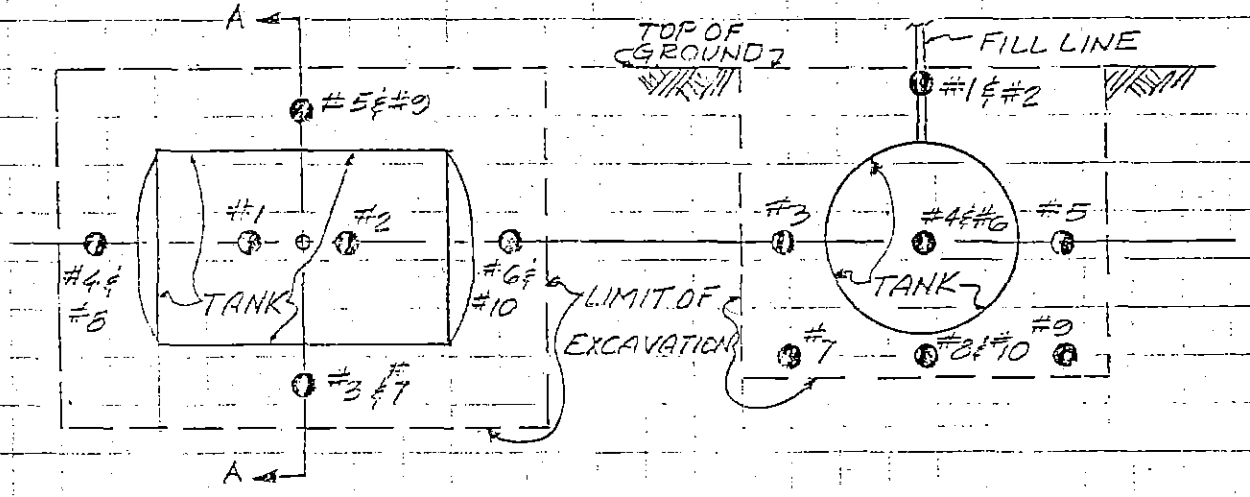
DOW CHEMICAL CO., U.S.A., LUDINGTON

RCRA CLOSURE - EPA FACILITY MID000616919

JOB NO.	SHEET	FILE	BY	DATE
	1 OF 1		CRD	12/18/85

ATTACHMENT III

SAMPLING LOCATION PLAN
UNDERGROUND WASTE STORAGE TANK



PLAN VIEW SECTION A-A

NOT TO SCALE

KEY

● - DENOTES SOIL SAMPLE LOCATION

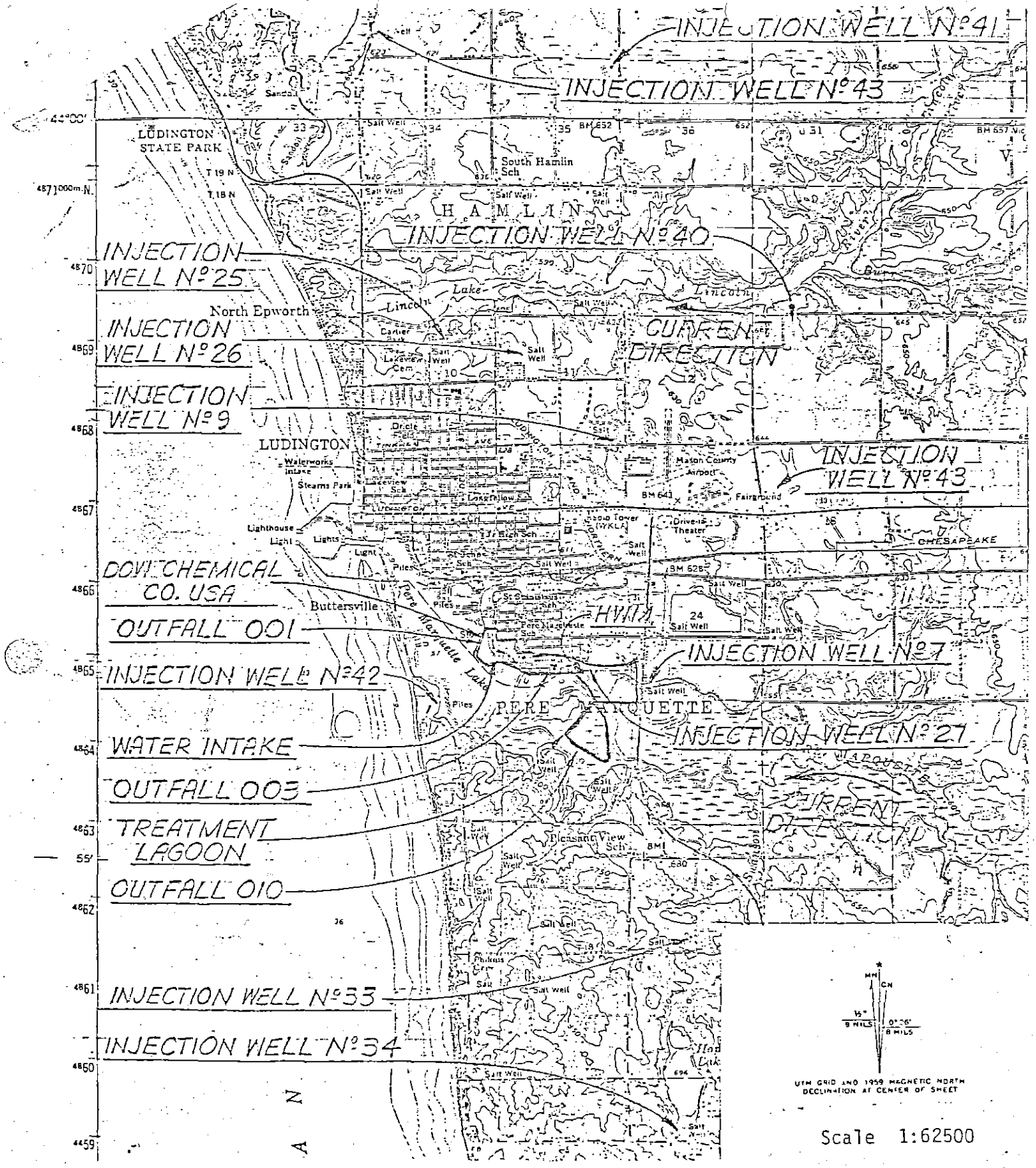
NOTES:

① THIS ATTACHMENT IS ONE OF FOUR ATTACHMENTS, TOTAL.

② SAMPLE COLLECTION, PRESERVATION AND ANALYSES WILL BE PERFORMED PER ATTACHMENT IV OF THIS PACKAGE

ATTACHMENT II

CONTENTS



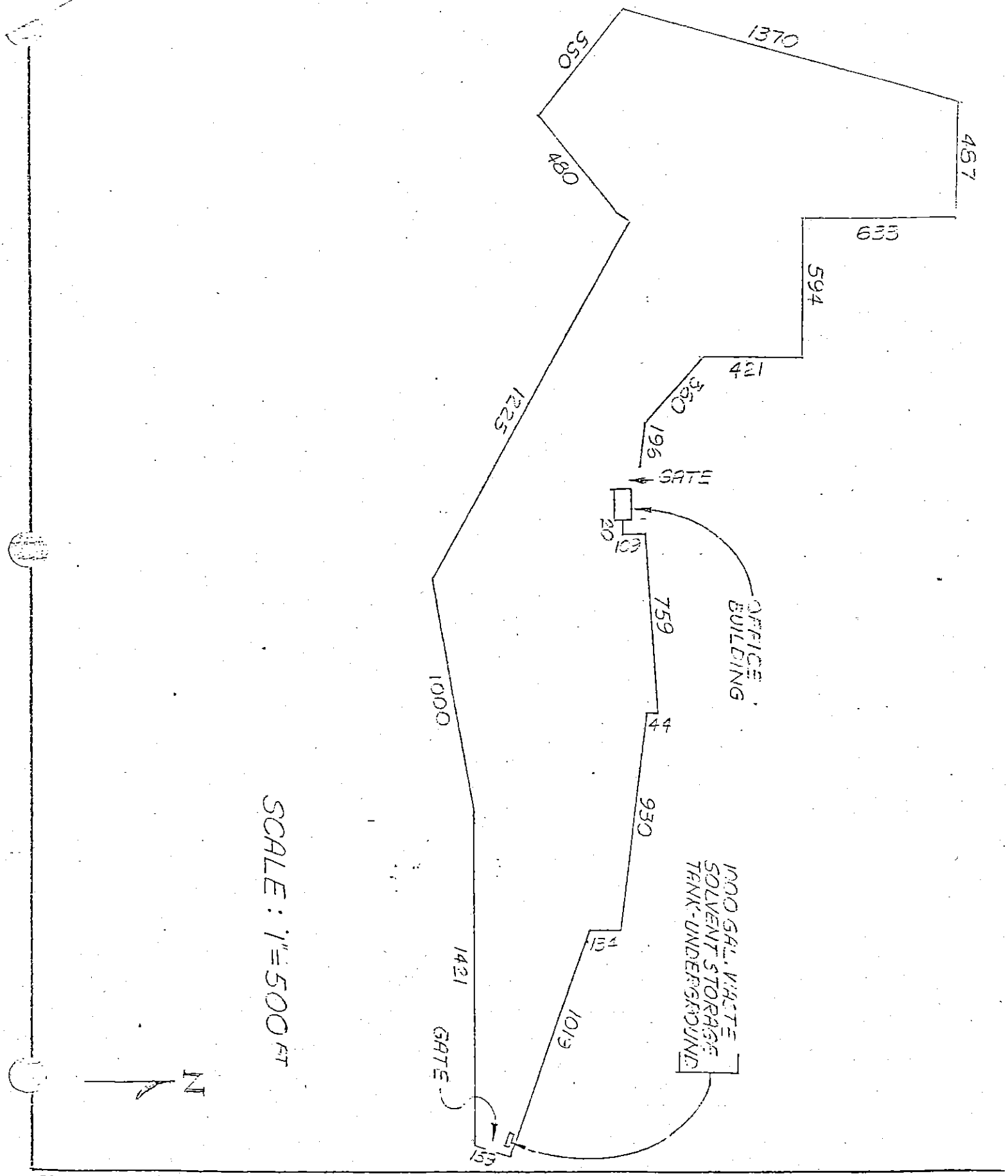
Scale 1:62500

Location Map

Dow Chemical Co. USA
Ludington, Michigan

SK-A-1269

...G (see page 4)


550
1370
497
480
633
594
421
350
196
GATE
1225
20
103
759
OFFICE BUILDING
1000
44
930
1000 GAL. WASTE SOLVENT STORAGE TANK-UNDERGROUND
134
1019
1421
GATE
153
SCALE: 1" = 500 FT
N

AZ.WASTE DIV

8 NOV 85 23 06

xc: ~~Del~~ Ken
~~At~~ ~~Chuck~~
John/Dist. ~~Joan~~
Original: CJE

5HS-13

NOV 14 1985

CERTIFIED MAIL P 139 423 337
RETURN RECEIPT REQUESTED

Mr. G.R. Veurink
Manager-Environmental Services
DOW Chemical U.S.A.
628 Building
Midland, MI 48640

RE: Closure Plan
DOW Chemical
Ludington, MI
MID 006 016 919

Dear Mr. Veurink:

We have reviewed the July 22, 1985 closure plan for the above referenced facility and determined that it is inadequate and is hereby disapproved. You are to provide a revised closure plan, addressing the deficiencies described in the enclosure to this letter, to this office by December 20, 1985.

Please submit a detailed description of your incinerator, referred to in a November 7, 1980 letter from Don Hannegan, DOW to the Environmental Protection Agency, Region V. We must determine if your process is exempt under the Hazardous and Solid Waste Amendments of 1984.

Please be aware that closure does not terminate interim status. A corrective action order may be issued to the above referenced facility, if the U.S. EPA determines that a release of hazardous waste or hazardous waste constituents is taking or has taken place.

If you have any questions regarding the plan, please contact Carol Witt of my staff, at (312) 886-6146 for assistance.

Sincerely,

Edith Ardiente, P.E.
Chief, Technical Programs Sections

cc: Alan Howard, MDNR

NOV 14 1985

ENCLOSURE

1. Include details on the tank design, discharge control equipment, and discharge confinement structures.

2. The geology of the area around the excavation should be defined. Including cross sections parallel and perpendicular to the length of the tank. And, the location of the saturated zone(s).

3. Supply a map showing the location of the tank at the facility.

4. Supply a sample location map, including the location of background soil samples.

5. Multiple soil horizons must have "background" established separately (i.e., a minimum of 4 samples per each soil unit).

6. To determine the presence of contamination, a minimum of 9 samples must be taken. The owner/operator must supply proposed locations and the reasoning for the locations.

7. A detailed sample and analysis plan must be given.

8. Any soil contaminated with a listed waste over background levels must be removed and sent to an EPA approved disposal facility.

9. The owner/operator must submit, under 40 CFR 265.112(a)(4), a schedule for final closure.

10. The owner/operator must comply with 40 CFR 265.111(b), that if contaminated soil is found the owner/operator will show no contaminated groundwater will remain at the site.

HAZ.WASTE DIV

18 NOV 85 2: 07

STATE OF MICHIGAN

JAMES J. BLANCHARD, Governor

DEPARTMENT OF NATURAL RESOURCES

STEVENS T. MASON BUILDING
BOX 30028
LANSING, MI 48909

RONALD O. SKOOG, Director

September 10, 1985

Ms. Edith Ardiente, Chief
Technical Programs Section
EPA Region V
230 South Dearborn
Chicago, Illinois 60604

RE: Closure Plan
Dow Chemical Company, Ludington
MID006016919

Dear Ms. Ardiente:

I have completed review of the aforementioned closure plan, and have found the plan acceptable provided the company does the following:

1. Obtain a "representative" sample by taking portions from a grid covering the entire bottom area of the tank and consisting of no less than nine samples. (The samples may be composited for purposes of analysis.)

2. If sampling finds detectable levels of 1,1,1-trichloroethylene, contaminated soils shall be removed, disposed of as a hazardous waste, and sampling repeated until non-detectable levels are found.

Thank you for allowing us to comment on this closure plan.

Sincerely,

Philip R. Roycraft, P.E.
Technical Services Section
Hazardous Waste Division
517-373-2730

cc: T. Polasek
C & E File
Chrono File

C & E file

MICHIGAN DEPARTMENT OF NATURAL RESOURCES

INTEROFFICE COMMUNICATION

RECEIVED
AUG 27 1985
HAZARDOUS WASTE DIVISION

Roscommon, Michigan 48653
Region II
August 23, 1985

TO: Philip Roycraft, Hazardous Waste Division
Mary Higgins Murphy, U.S. EPA, Region V

FROM: Thomas M. Polasek, District Supervisor, Hazardous Waste

SUBJECT: Dow Chemical - Ludington Closure Plan Review

On August 8, 1985, I met with Bill Hughes of the company to review their closure plan. The storage facility consisted of a 1,000 gallon underground storage tank for F001 materials primarily 111 trichloroethylene. The waste is still generated at 16 different sites and is accumulated in 55-gallon drums. The drums are pumped out on a 90-day schedule by Bierline Environmental Service. The material is incinerated at the Midland facility.

Closure will consist of a simple tank extraction. Adjacent to hazardous tank is another tank that was used to store waste oil. This tank will also be removed. Any contaminated soil will be disposed of in Midland.

It is unclear what the company considers a representative soil sample from under the tank. I would consider a 9 grab composite sample collected from the area under the tank acceptable. Should significant soil contamination be found, then groundwater monitoring must be addressed.

I would recommend that the plan be approved based on the acceptability of soil analyses.

TMP:plc

RCRA Inspection Report

EPA Identification Number: M I D 0 0 6 0 1 6 9 1 9

Installation Name: Dow Chemical

Location Address: _____

City: Ludington State: MI

Date of inspection: 9/8/85 Time of inspection (from) 10:30 (to) 11:30

Person(s) interviewed	Title	Telephone
Bill Hughes		616-845-9390

Inspector(s)	Agency/Title	Telephone
Tom Polasek	MDNR	517-275-5157

Installation Activity (mark only one box) Inspection Form(s)

- [X] Treatment/Storage/Disposal per 40 CFR 265.1 and/or Generation and/or Transportation — A
- [ ] Treatment/Storage/Disposal (no generation or Transportation) — A
- [ ] Generation and Transportation — B, C
- [ ] Generation only — B
- [ ] Transportation only — C

Closure Plan Review

New ✓ Update ____

1. U.S. EPA ID MID 006016919 3. CITY Ludington

2. INSTALLATION NAME Dow Chemical Co

4. HANDLER TYPE ___ MAJOR ✓ NON - MAJOR

5. DATE OF INITIAL EVALUATION WHICH IS THE BASIS FOR THIS REPORT 8 (M) 8 (D) 85 (Y)

6. TYPE OF EVALUATION COVERED BY THIS REPORT (Check only one)
- ✓ 1 Evaluation Inspection
- ___ 2 Sampling Inspection
- ___ 3 Record Review
- ___ 4 Groundwater Evaluation
- ___ 5 Followup Inspection
- ___ 6 Citizen Complaint
- ___ 7 Part B Call-In
- ___ 8 Withdrawal
- ✓ 9 Closed Facility
- ___ 0 Other

7. DATE OF EVALUATION IF THE EVALUATION FOLLOWS AN INITIAL EVALUATION (Enter date only if different from 5.) M ___ D ___ Y ___

8. AREA & CLASS OF VIOLATION (Enter 'X' in box if violations found. Enter 'O' if no violations found.)

9. EVALUATION COMMENTS: Closure plan review

Class of Violation	Area of Violation							RESP Agency	Free Fields	
	GWM	CL/PC	FIN/RESP	PT B	CMPL/SCH	Manifest	Other		2	3
I										
II										

10. ENFORCEMENT ACTION (Most frequently used codes are listed below. See Instructions for additional codes.)

11. ENFORCEMENT COMMENTS

Violation Class	Violation Area	Action Type (use code)	Action Date Taken	Compliance Date Scheduled	Compliance Date Actual	Status Code	Status Date	Penalty Assess	Penalty Collect	Resp Agency	Free Fields 2	Free Fields 3

Codes for Enforcement Actions: 03 = Warning Letter
04 = Compliance Complaint
05 = Administrative Order
10 = Informal

Codes for Enforcement Status: A = Active/progressing to resolution
R = Resolved/no further action required
X = Pending/no response
P = Progressed to subsequent action

Codes for Responsible Agency: S = State
J = Joint State/U.S. EPA
E = U.S. EPA

12. For State Use

cc: ~~Del~~ ~~Cheek~~
~~At~~
John/Dist. Joan
Original: [redacted]

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
230 SOUTH DEARBORN ST.
CHICAGO, ILLINOIS 60604

REPLY TO THE ATTENTION OF:
5HS-13

RECEIVED
AUG 02 1985
HAZARDOUS WASTE DIVISION

JUL 31 1985

Mr. Alan J. Howard, Chief
Technical Services Section
Hazardous Waste Division
Michigan Department of Natural Resources
P.O. Box 30028
Lansing, Michigan 48909

RE: Closure Plan
Dow Chemical
Ludington, MI
MID 006 016 919

Dear Mr. Howard:

Enclosed is/are one (1) copy(s) of a closure plan for the referenced facility. Please perform a technical evaluation of the plan, and provide us your comments by Sept. 9, 1985.

If you have any questions on the closure plan, please contact Carol Witt of my staff, at (312) 886-6146.

Sincerely,

Edith M. Ardiente

Edith M. Ardiente, P.E.
Chief, Technical Programs Section

Enclosure(s)

cc: Mary Higgins
HWDMS Update File

SFL-5

DOW CHEMICAL U.S.A.

July 22, 1985

MICHIGAN DIVISION
MIDLAND, MICHIGAN 48640

Mr. James Mayka, P.E.
Technical Program Section, 5HS-13
Solid Waste Branch
U.S. Environmental Protection Agency-Region V
230 South Dearborn Street
Chicago, IL 60604

Dear Mr. Mayka:

SUBJECT: CLOSURE OF STORAGE FACILITY, EPA ID NUMBER MID 006016919 (E, TSD, PA

In accordance with the requirements of 40 CFR 265 Subpart G, we are hereby submitting notice of intent to close subject facility. This facility consists of a 1,000 gallon capacity underground tank used for the storage of F001 waste. The tank was installed in November, 1980 and use of the tank was discontinued in August, 1981. At that time, the tank was rinsed clean with fuel oil, pumped empty and has been unused since.

The proposed Closure Plan consists of the following activities:

1. Excavate and remove tank and visibly inspect for integrity.

2. Determine tank integrity using a non-destructive test (such as a pressure test).

3. Inspect excavation to visually determine the presence or absense of residual waste.

4. Collect a representative soil sample and analyze for the presence of the F001 waste by infrared spectrophotometry.

5. Perform closure certification activities.

We hereby request your review and written approval of this plan as expeditiously as possible. Thank you for your consideration of this matter.

Should you have any questions, please contact Mr. Ric Olson at (517)636-3916.

Sincerely,

Gary R. Veurink

G. R. Veurink, Manager
Environmental Services
628 Building
(517)636-2646

ccr

DOW CHEMICAL U.S.A.

MICHIGAN DIVISION
MIDLAND, MICHIGAN 48640

July 22, 1985

JUL 24 1985

RECEIVED
JUL 24 1985
SOLID WASTE BRANCH
U.S. EPA, REGION V

SWB-AIS
U.S. EPA, REGION V

Mr. James Mayka, P.E.
Technical Program Section, 5HS-13
Solid Waste Branch
U.S. Environmental Protection Agency-Region V
230 South Dearborn Street
Chicago, IL 60604

Dear Mr. Mayka:

SUBJECT: CLOSURE OF STORAGE FACILITY, EPA ID NUMBER MID 006016919

In accordance with the requirements of 40 CFR 265 Subpart G, we are hereby submitting notice of intent to close subject facility. This facility consists of a 1,000 gallon capacity underground tank used for the storage of F001 waste. The tank was installed in November, 1980 and use of the tank was discontinued in August, 1981. At that time, the tank was rinsed clean with fuel oil, pumped empty and has been unused since.

The proposed Closure Plan consists of the following activities:

1. Excavate and remove tank and visibly inspect for integrity.

2. Determine tank integrity using a non-destructive test (such as a pressure test).

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We hereby request your review and written approval of this plan as expeditiously as possible. Thank you for your consideration of this matter.

Should you have any questions, please contact Mr. Ric Olson at (517)636-3916.

Sincerely,

Gary R. Veurink

G. R. Veurink, Manager
Environmental Services
628 Building
(517)636-2646

ccr

Region II Headquarters
P.O. Box 128
Roscommon, MI 48653
July 5, 1984

Mr. Bill Hughes
Environmental Services
Dow Chemical Company
South Madison and Seventh
Ludington, MI 49431

Re: Hazardous Waste Inspection

Dear Mr. Hughes:

On June 27, 1984, acting as a representative of the United States Environmental Protection Agency, I performed an inspection of your facility. The purpose of the inspection was to determine the compliance of the Dow Chemical Company, Ludington Plant, with the provisions of the Federal Resource Recovery and Conservation Act of 1976.

During the inspection the following deficiency was noted:

> Pursuant to 40 CFR 265.16 Personnel Training, the owner/operator of a hazardous waste facility is required to maintain written job descriptions for each employee working with hazardous waste. At the time of the inspection, your facility did not have written job descriptions as required.

You are requested to take action to correct this deficiency and notify this office by July 31, 1984, of the corrective action taken.

If you have any questions on the preceding, please do not hesitate to contact me.

Very truly yours,

Fred W. Gottschalk
Water Quality Specialist
HAZARDOUS WASTE DIVISION
517-275-5151

FWG:fas

cc: HWD
EPA
file
c.file

RCRA Inspection Report

EPA Identification Number: MID 006016919

Installation Name: DOW CHEMICAL CO.

Location Address: _____

City: LUDINGTON State: MI.

Date of inspection: 6/27/84 Time of inspection (from) 12:30 PM (to) 2:30 P

Person(s) interviewed	Title	Telephone
BILL HUGHES	ENVIRONMENTAL SERVICES	616/845-4390

Inspector(s)	Agency/Title	Telephone
FRED GOTTSCHALK	MDNR/WATER QUALITY SPEC.	517/275-5151

Installation Activity (mark only one box) Inspection Form(s)

- ☐ Treatment/Storage/Disposal per 40 CFR 265.1 and/or Generation and/or Transportation — A
- ☐ Treatment/Storage/Disposal (no generation or Transportation) — A
- ☐ Generation and Transportation — B, C
- ☑ Generation only — B
- ☐ Transportation only — C

INSPECTION FORM B

Section A: Scope of inspection

Standards for generators of HAZARDOUS WASTE subject to 40 CFR 262.10

Section B: MANIFEST REQUIREMENTS (Part 262, Subpart B)

		Yes	No	NI*	Remarks
(1)	Does the generator have copies of the manifest available for review? 262.40	✓			
(2)	Examine manifests for shipments in past 6 months. Indicate approximate number of manifested shipments during that period.	3			
(3)	Do the manifest forms examined contain the following information? (If possible, make copies of, or record information from, manifests that do not contain the critical elements) 262.21				
	a. Manifest document number?	✓			
	b. Name, mailing address, telephone number, and EPA ID number of generator?	✓			
	c. Name and EPA ID number of transporter(s)?	✓			A-1 DISPOSAL
	d. Name, Address, and EPA ID Number of designated permitted facility and alternate facility?	✓			DOW - MIDLAND INCINERATOR
	e. The description of the waste(s) (DOT shipping name, DOT hazard class, DOT identification number)?	✓			CHLORINATED WASTE OIL, CAL. PHOSPHATE
	f. The total quantity of waste(s) and the type and number of containers loaded?	✓			
	g. Required certification?	✓			
	h. Required signatures?	✓			
(4)	Reportable exceptions 262.42				
	a. For manifests examined in (2) (except for shipments within the last 35 days), enter the number of manifests for which the generator has NOT received a signed copy from the designated facility within 35 days of the date of shipment.	0			
	b. For manifests indicated in (4a), enter the number for which the generator has submitted exception reports (40 CFR 262.42) to the Regional Administrator.	—			

Section C - PRE-TRANSPORT REQUIREMENTS
(40 CFR Part 262 Subpart C)

		Yes	No	NI	Remarks
(1)	Is waste packaged in accordance with DOT regulations? (Required prior to movement of hazardous waste off-site) 262.30	✓			
(2)	Are waste packages marked and labeled in accordance with DOT regulations concerning hazardous waste materials? (Required prior to movement of hazardous waste off-site) 262.31 and 262.32			✓	N/A-MATERIAL IS PUMPED OUT OF STORAGE CONTAINER INTO HAULING VEHICLE
(3)	If required, are placards available to transporter? 262.33			✓	N/A
** (4)	Pre-shipment Accumulation:				
a.	Is hazardous waste accumulated in containers? If no, skip to b. 262.34	✓			
i.	Is each container clearly marked with the date on which the period of accumulation began?	✓			
ii.	Have more than 90 days elapsed since the dates marked?		✓		
iii.	Is each container labeled or marked clearly with the words "Hazardous Wastes?"	✓			
iv.	Are containers in good condition?	✓			
v.	Are containers compatible with waste in them?	✓			
vi.	Are containers managed to prevent leaks?	✓			
vii.	Are containers stored closed?		✓		CONTAINERS ARE IN USE
viii.	Are containers inspected weekly for leaks and defects?	✓			
ix.	Are ignitable and reactive wastes stored at least 15 meters (50 feet) from the facility property line? (Indicate if waste is ignitable or reactive).	✓			

** applies only to GENERATORS that store hazardous waste on-site for 90 days or less without a permit. These items do not apply to generators whose waste is immediately transported off-site.

	Yes	No	NI	Remarks
x. Are incompatible wastes stored in separate containers? (If not, the provisions of 40 CFR 265.17(b) apply.)	✓			
xi. Are containers of incompatible waste separated or protected from each other by physical barriers or sufficient distance?	✓			
b. Is hazardous waste accumulated in tanks? If no, skip to c. 265.34 (January 11, 1982 revision)		✓		
i. Is each tank labeled or marked clearly with the words "Hazardous Wastes"? 265.34 (January 1982 revision)				
ii. Are tanks used to store only those wastes which will not cause corrosion, leakage or premature failure of the tank? 265.192				
iii. Do uncovered tanks have at least 60 cm (2 feet) of freeboard, or dikes or other containment structures?				
iv. Do continuous feed systems have a waste-feed cutoff?				
v. Are waste analyses done before the tanks are used to store a substantially different waste than before? 265.193				
vi. Are required daily and weekly inspections done? 265.194				
vii. Are reactive and ignitable wastes in tanks protected or rendered non-reactive or nonignitable? Indicate if waste is ignitable or reactive. (If waste is rendered non-reactive or nonignitable, see treatment requirements.) 265.198				
viii. Are incompatible wastes stored in separate tanks? (If not, the provisions of 40 CFR §265.17(b) apply.) 265.199				

	Yes	No	NI	Remarks

ix. Has the owner or operator observed the National Fire Protection Association's buffer zone requirements for tanks containing ignitable or reactive wastes?

Tank capacity: _____ gallons

Tank diameter: _____ feet

Distance of tank from property line _____ feet

(see tables 2-1 through 2-6 of NFPA's "Flammable and Combustible Liquids Code - 1977" to determine compliance.)

c. Is hazardous waste accumulated in other than tanks or containers? ___ ✓ ___ _____

d. Personnel training. 262.34 (a) 5

Do personnel training records include: 265.16

i. Job Titles? ✓ ___ ___ _____

ii. Job Descriptions? ___ ✓ ___ _____

iii. Description of training? ✓ ___ ___ _____

iv. Records of training? ✓ ___ ___ _____

v. Did personnel receive the required training by 5-19-81? ✓ ___ ___ _____

vi. Do new personnel receive required training within six months? ___ ___ ___ NOT HAD ANY NEW PERSONNEL

vii. Do personnel training records indicate that personnel have taken part in an annual review of initial training? ✓ ___ ___ _____

e. Preparedness and Prevention 265. Subpart C

i. Maintenance and Operation of Facility:

Is there any evidence of fire, explosion, or release of hazardous waste or hazardous waste constituent? 264.31 ___ ✓ ___ _____

	Yes	No	NI	Remarks
ii. If required, does this facility have the following equipment: 264.32				
Internal communications or alarm systems?				NOT REQUIRED
Telephone or 2-way Radios at the scene of operations?	✓			
Portable fire extinguishers, fire control, spill control equipment and decontamination equipment?	✓			

Indicate the volume of water and/or foam available for fire control:

_____

_____

iii. Testing and Maintenance of Emergency Equipment: 264.33				
Has the owner or operator established testing and maintenance procedures for emergency equipment?	✓			
Is emergency equipment maintained in operable condition?	✓			
iv. Has owner/operator provided immediate access to internal alarms (if needed)?				NOT REQUIRED
v. Is there adequate aisle space for unobstructed movement?	✓			
vi. Has the owner or operator attempted to make arrangements with local authorities in case of an emergency at the facility?	✓			

f. Contingency Plan and Emergency Procedures 265 Subpart D

Does the contingency plan contain the following information:

i. The actions facility personnel must take to comply with §265.51 and 265.56 in response to fires, explosions, or any unplanned release of hazardous waste? (If the owner has a Spill Prevention, Control and Countermeasures (SPCC) Plan, he needs only to amend that plan to incorporate hazardous waste management provisions that are sufficient to comply with the requirements of this Part (as applicable.) 265.52	✓			

		Yes	No	NI	Remarks
ii.	Arrangements agreed to by local police departments, hospitals, contractors, and State and local emergency response teams to coordinate emergency services, pursuant to §265.37?	✓			
iii.	Names, addresses, and phone numbers (Office and Home) of all persons qualified to act as emergency coordinator.	✓			
iv.	A list of all emergency equipment at the facility which includes the location and physical description of each item on the list, and a brief outline of its capabilities?	✓			
v.	An evacuation plan for facility personnel where there is a possibility that evacuation could be necessary? (This plan must describe signal(s) to be used to begin evacuation, evacuation routes and alternate evacuation routes?)	✓			
vi.	Are copies of the Contingency Plan available at site and local emergency organizations?	✓			
vii.	Is the facility emergency coordinator identified?	✓			
viii.	Is coordinator familiar with all aspects of site operation and emergency procedures?	✓			
ix.	Does the Emergency Coordinator have the authority to carry out the Contingency Plan?	✓			
x.	If an emergency situation has occured at this facility, has the emergency coordinator followed the emergency procedures listed in 265.56?				NONE HAS OCCURED

Section D: RECORDKEEPING AND REPORTING (Part 262, Subpart D)

	Yes	No	NI	Remarks
(1) Are all test results and analyses needed for hazardous waste determinations retained for at least three years? 262.40	✓			

Section E: INTERNATIONAL SHIPMENTS (Part 262 Subpart E)
262.50

(1) Has the installation imported or exported hazardous waste? If "no", skip a and b.		✓		
a. Exporting Hazardous Waste, has a generator:				
i. Notified the Administrator in writing?				
ii. Obtained the signature of the foreign consignee confirming delivery of the waste(s) in the foreign country?				
iii. Met the Manifest requirements?				
b. Importing Hazardous Waste, has the generator met the manifest requirements?				

Remarks:

(4-82B)

Remarks:

(4-82B)

TO: AL ~~HOWARD~~ Chmela
OFFICE OF HAZARDOUS WASTE MGT.

FROM: EV Cole
WQD DIST #4 – CADILLAC

File

DOW CHEMICAL CO – SECRECY AGREEMENT

OUR JOB NO.

DATE OF MEMO 4 OCT 82

MESSAGE

Received a phone call this date from Plant Manager Bill Hughes, – Ludington. He had received a list of EPA-designated representatives for RCRA inspection and my name is on it. He said that, because I am EPA-designated, there is no further need for me to sign the secrecy agreement. You're probably already aware of this via EPA and the parent Dow Chemical Company, but I thought I'd pass it on.

SIGNED

DO NOT WRITE BELOW THIS LINE

REPLY

WASN'T, THANKS!

OCT 06 1982

ACT 64

SIGNED

DATE

SENDER — Retain part 2 for your follow-up, send parts 1 and 3 to addressee
RECIPIENT — Retain part 1 and return part 3

NAL

Inspection File

file chronologically

MICHIGAN DEPARTMENT OF NATURAL RESOURCES

Dow Facility file

INTEROFFICE COMMUNICATION

State Office Building
350 Ottawa, N.W., Suite 6D
Grand Rapids, Michigan 49503

RECEIVED
MAR 23 1981
ACT

TO: Al Howard, Office of Hazardous Waste Management

FROM: Dan Kakkuri, Air Quality, Grand Rapids D.K.

DATE: March 18, 1981

SUBJECT: RCRA Inspection at Dow Chemical, Ludington

On March 16, 1981, Mr. Everett Bole, Water Quality Division, and myself met with Mr. Jack Maskal of Dow Chemical with intentions of conducting a RCRA inspection. Mr. Maskal informed Mr. Bole and I that Dow Chemical would like an explanation in writing before this inspection could be carried out. This correspondence would include an explanation of the delegation of authority of RCRA requirements to the DNR and a legal basis for this type of inspection procedure. Mr. Maskal's mailing address follows:

Jack Maskal
Environmental Quality Control Manager
Dow Chemical Company
South Madison Street
Ludington, Michigan 49431

Part A application for Dow never arrived at this office so there is nothing to return. Please contact me if you have any questions regarding this matter.

DK:nc

Al wrote a note to Dan sent him copy of Dow Ludington Part A cc to Rick Johns I sent him copy of Upjohn Part A 4-1-81 Marta

Please print or type in the unshaded areas only
(fill—in areas are spaced for elite type, i.e., 12 characters/inch).

Form Approved OMB No. 158-R0175 356

FORM 1 GENERAL

U.S. ENVIRONMENTAL PROTECTION AGENCY

GENERAL INFORMATION

Consolidated Permits Program

(Read the "General Instructions" before starting.)

I. EPA I.D. NUMBER: F MID006016919 | T/A: 2 | C: D

GENERAL INSTRUCTIONS

If a preprinted label has been provided, affix it in the designated space. Review the information carefully; if any of it is incorrect, cross through it and enter the correct data in the appropriate fill—in area below. Also, if any of the preprinted data is absent *(the area to the left of the label space lists the information that should appear)*, please provide it in the proper fill—in area(s) below. If the label is complete and correct, you need not complete Items I, III, V, and VI *(except VI-B which must be completed regardless)*. Complete all items if no label has been provided. Refer to the instructions for detailed item descriptions and for the legal authorizations under which this data is collected.

LABEL ITEMS

I. EPA I.D. NUMBER	MID006016919
III. FACILITY NAME	~~DOW CHEMICAL CO~~
V. FACILITY MAILING ADDRESS	S MADISON & SEVENTH LUDINGTON, MI 49431
VI. FACILITY LOCATION	S MADISON & SEVENTH LUDINGTON, MI 49431

II. POLLUTANT CHARACTERISTICS

INSTRUCTIONS: Complete A through J to determine whether you need to submit any permit application forms to the EPA. If you answer "yes" to any questions, you must submit this form and the supplemental form listed in the parenthesis following the question. Mark "X" in the box in the third column if the supplemental form is attached. If you answer "no" to each question, you need not submit any of these forms. You may answer "no" if your activity is excluded from permit requirements; see Section C of the instructions. See also, Section D of the instructions for definitions of **bold**—faced terms.

SPECIFIC QUESTIONS	MARK 'X' YES	NO	FORM ATTACHED
A. Is this facility a publicly owned treatment works which results in a discharge to waters of the U.S.? (FORM 2A)		X	
B. Does or will this facility *(either existing or proposed)* include a concentrated animal feeding operation or aquatic animal production facility which results in a discharge to waters of the U.S.? (FORM 2B)		X	
C. Is this a facility which currently results in discharges to waters of the U.S. other than those described in A or B above? (FORM 2C)	X		NA
D. Is this a proposed facility *(other than those described in A or B above)* which will result in a discharge to waters of the U.S.? (FORM 2D)		X	
E. Does or will this facility treat, store, or dispose of hazardous wastes? (FORM 3)	X		X
F. Do you or will you inject at this facility industrial or municipal effluent below the lowermost stratum containing, within one quarter mile of the well bore, underground sources of drinking water? (FORM 4)	X		NA
G. Do you or will you inject at this facility any produced water or other fluids which are brought to the surface in connection with conventional oil or natural gas production, inject fluids used for enhanced recovery of oil or natural gas, or inject fluids for storage of liquid hydrocarbons? (FORM 4)		X	
H. Do you or will you inject at this facility fluids for special processes such as mining of sulfur by the Frasch process, solution mining of minerals, in situ combustion of fossil fuel, or recovery of geothermal energy? (FORM 4)		X	
I. Is this facility a proposed stationary source which is one of the 28 industrial categories listed in the instructions and which will potentially emit 100 tons per year of any air pollutant regulated under the Clean Air Act and may affect or be located in an attainment area? (FORM 5)		X	
J. Is this facility a proposed stationary source which is NOT one of the 28 industrial categories listed in the instructions and which will potentially emit 250 tons per year of any air pollutant regulated under the Clean Air Act and may affect or be located in an attainment area? (FORM 5)		X	

III. NAME OF FACILITY

1 SKIP: THE DOW CHEMICAL CO. LUDINGTON PLANT

IV. FACILITY CONTACT

A. NAME & TITLE (last, first, & title)	B. PHONE (area code & no.)
2 MASKAL JACK ENVIRON SPECIALIST	616 845 4378

V. FACILITY MAILING ADDRESS

A. STREET OR P.O. BOX	B. CITY OR TOWN	C. STATE	D. ZIP CODE
3	4		

VI. FACILITY LOCATION

A. STREET, ROUTE NO. OR OTHER SPECIFIC IDENTIFIER	B. COUNTY NAME	C. CITY OR TOWN	D. STATE	E. ZIP CODE	F. COUNTY CODE (if known)
5	MASON	6			053

MAY 19 1980

CONTINUE ON REVERSE

CONTINUED FROM THE FRONT

VII. SIC CODES (4-digit, in order of priority)

A. FIRST	B. SECOND
2810 (specify) INDUSTRIAL INORGANIC CHEMICALS	3274 (specify) LIME
C. THIRD	**D. FOURTH**
(specify)	(specify)

VIII. OPERATOR INFORMATION

A. NAME: THE DOW CHEMICAL COMPANY

B. Is the name listed in Item VIII-A also the owner? [X] YES [ ] NO

C. STATUS OF OPERATOR (Enter the appropriate letter into the answer box; if "Other", specify.)
F = FEDERAL; S = STATE; P = PRIVATE; M = PUBLIC (other than federal or state); O = OTHER (specify)
P (specify)

D. PHONE (area code & no.): A 616 845 4411

E. STREET OR P.O. BOX: S MADISON AND SEVENTH

F. CITY OR TOWN: LUDINGTON

G. STATE: MI

H. ZIP CODE: 49431

IX. INDIAN LAND
Is the facility located on Indian lands? [ ] YES [X] NO

X. EXISTING ENVIRONMENTAL PERMITS

A. NPDES (Discharges to Surface Water): NMI0003026

D. PSD (Air Emissions from Proposed Sources): 9P

B. UIC (Underground Injection of Fluids): UMI0003026

E. OTHER (specify): 9

(specify) SEE ATTACHED SHEET

C. RCRA (Hazardous Wastes): R

E. OTHER (specify): 9

(specify)

XI. MAP

Attach to this application a topographic map of the area extending to at least one mile beyond property bounderies. The map must show the outline of the facility, the location of each of its existing and proposed intake and discharge structures, each of its hazardous waste treatment, storage, or disposal facilities, and each well where it injects fluids underground. Include all springs, rivers and other surface water bodies in the map area. See instructions for precise requirements.

XII. NATURE OF BUSINESS (provide a brief description)

MANUFACTURE OF INORGANIC CHEMICALS FROM NATURAL BRINES AND DOLOMITIC LIMESTONE AND PURCHASED INORGANIC MATERIALS. PRODUCTS ARE CALCIUM CHLORIDE, MAGNESIUM CHLORIDE, MAGNESIUM HYDROXIDE, BROMINE, AND CATALYSTS.

XIII. CERTIFICATION (see instructions)

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this application and all attachments and that, based on my inquiry of those persons immediately responsible for obtaining the information contained in the application, I believe that the information is true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

A. NAME & OFFICIAL TITLE (type or print)	B. SIGNATURE	C. DATE SIGNED
E. A. ROZAS, DIVISION MANAGER D. M. HANNEGAN, PLANT MANAGER		Nov 80 Nov 4, 1980

COMMENTS FOR OFFICIAL USE ONLY

EPA Form 3510-1 (6-80) REVERSE

DOW CHEMICAL U.S.A.

FORM 1 CONSOLIDATED PERMITS PROGRAM EPA ID NUMBER MID006016919

ITEM NO. X-E EXISTING ENVIRONMENTAL PERMITS

AIR USE PERMITS FOR POINT SOURCES ISSUED

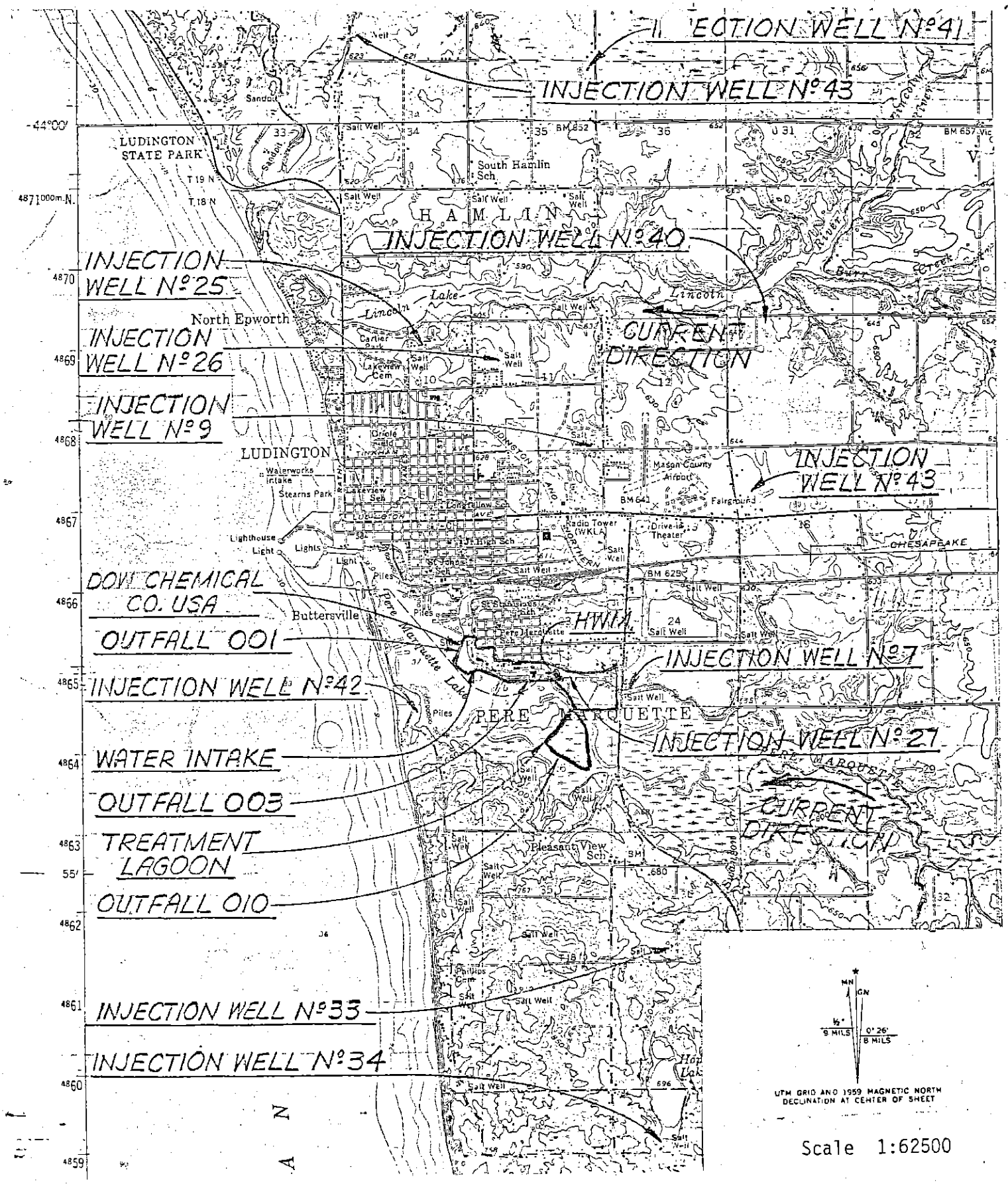
BY THE STATE OF MICHIGAN TO:

THE DOW CHEMICAL COMPANY

LUDINGTON PLANT

STATE PERMIT NUMBERS

31 - 72
252 - 72
251 - 73
396 - 73
416 - 73
341 - 74
342 - 74
343 - 74
37 - 75
149 - 75
256 - 76
362 - 76
290 - 77
849 - 77
416 - 78
382 - 79



Scale 1:62500

Location Map

Dow Chemical Co. USA
Ludington, Michigan

SK-A-1269

(fill—in areas are spaced for elite type, i.e., 12 characters/inch).

Form Approved OMB No. 158-S80004

FORM 3 RCRA

U.S. ENVIRONMENTAL PROTECTION AGENCY

HAZARDOUS WASTE PERMIT APPLICATION

Consolidated Permits Program

(This information is required under Section 3005 of RCRA.)

I. EPA I.D. NUMBER: F M I D 0 0 6 0 1 6 9 1 9 | T/A: | C: 1

FOR OFFICIAL USE ONLY

APPLICATION APPROVED	DATE RECEIVED (yr., mo., & day)	COMMENTS

II. FIRST OR REVISED APPLICATION

Place an "X" in the appropriate box in A or B below *(mark one box only)* to indicate whether this is the first application you are submitting for your facility or a revised application. If this is your first application and you already know your facility's EPA I.D. Number, or if this is a revised application, enter your facility's EPA I.D. Number in Item 1 above.

A. FIRST APPLICATION *(place an "X" below and provide the appropriate date)*

[X] 1. EXISTING FACILITY *(See instructions for definition of "existing" facility. Complete item below.)*

[ ] 2. NEW FACILITY *(Complete item below.)*

FOR EXISTING FACILITIES, PROVIDE THE DATE (yr., mo., & day) OPERATION BEGAN OR THE DATE CONSTRUCTION COMMENCED *(use the boxes to the left)*: C | YR. 8 2 | MO. 1 0 | DAY 3 0

FOR NEW FACILITIES, PROVIDE THE DATE (yr., mo., & day) OPERATION BEGAN OR IS EXPECTED TO BEGIN: YR. | MO. | DAY

B. REVISED APPLICATION *(place an "X" below and complete Item I above)*

[ ] 1. FACILITY HAS INTERIM STATUS

[ ] 2. FACILITY HAS A RCRA PERMIT

III. PROCESSES – CODES AND DESIGN CAPACITIES

A. PROCESS CODE – Enter the code from the list of process codes below that best describes each process to be used at the facility. Ten lines are provided for entering codes. If more lines are needed, enter the code(s) in the space provided. If a process will be used that is not included in the list of codes below, then describe the process *(including its design capacity)* in the space provided on the form *(Item III-C)*.

B. PROCESS DESIGN CAPACITY – For each code entered in column A enter the capacity of the process.

1. AMOUNT – Enter the amount.
2. UNIT OF MEASURE – For each amount entered in column B(1), enter the code from the list of unit measure codes below that describes the unit of measure used. Only the units of measure that are listed below should be used.

PROCESS	PROCESS CODE	APPROPRIATE UNITS OF MEASURE FOR PROCESS DESIGN CAPACITY
Storage:		
CONTAINER *(barrel, drum, etc.)*	S01	GALLONS OR LITERS
TANK	S02	GALLONS OR LITERS
WASTE PILE	S03	CUBIC YARDS OR CUBIC METERS
SURFACE IMPOUNDMENT	S04	GALLONS OR LITERS
Disposal:		
INJECTION WELL	D79	GALLONS OR LITERS
LANDFILL	D80	ACRE-FEET *(the volume that would cover one acre to a depth of one foot)* OR HECTARE-METER
LAND APPLICATION	D81	ACRES OR HECTARES
OCEAN DISPOSAL	D82	GALLONS PER DAY OR LITERS PER DAY
SURFACE IMPOUNDMENT	D83	GALLONS OR LITERS

PROCESS	PROCESS CODE	APPROPRIATE UNITS OF MEASURE FOR PROCESS DESIGN CAPACITY
Treatment:		
TANK	T01	GALLONS PER DAY OR LITERS PER DAY
SURFACE IMPOUNDMENT	T02	GALLONS PER DAY OR LITERS PER DAY
INCINERATOR	T03	TONS PER HOUR OR METRIC TONS PER HOUR; GALLONS PER HOUR OR LITERS PER HOUR
OTHER *(Use for physical, chemical, thermal or biological treatment processes not occurring in tanks, surface impoundments or incinerators. Describe the processes in the space provided; Item III-C.)*	T04	GALLONS PER DAY OR LITERS PER DAY

UNIT OF MEASURE	UNIT OF MEASURE CODE
GALLONS	G
LITERS	L
CUBIC YARDS	Y
CUBIC METERS	C
GALLONS PER DAY	U
LITERS PER DAY	V
TONS PER HOUR	D
METRIC TONS PER HOUR	W
GALLONS PER HOUR	E
LITERS PER HOUR	H
ACRE-FEET	A
HECTARE-METER	F
ACRES	B
HECTARES	Q

EXAMPLE FOR COMPLETING ITEM III *(shown in line numbers X-1 and X-2 below)*: A facility has two storage tanks, one tank can hold 200 gallons and the other can hold 400 gallons. The facility also has an incinerator that can burn up to 20 gallons per hour.

C DUP T/A C 1

LINE NUMBER	A. PROCESS CODE (from list above)	B. PROCESS DESIGN CAPACITY 1. AMOUNT (specify)	B. PROCESS DESIGN CAPACITY 2. UNIT OF MEASURE (enter code)	FOR OFFICIAL USE ONLY	LINE NUMBER	A. PROCESS CODE (from list above)	B. PROCESS DESIGN CAPACITY 1. AMOUNT	B. PROCESS DESIGN CAPACITY 2. UNIT OF MEASURE (enter code)	FOR OFFICIAL USE ONLY
X-1	S 0 2	600	G		5				
X-2	T 0 3	20	E		6				
1	S 0 2	1000	G		7				
2					8				
3					9				
4					10				

NOV 10 1980

III. PROCESSES *(continued)*

C. SPACE FOR ADDITIONAL PROCESS CODES OR DESCRIBING OTHER PROCESSES *(code "T")*. FOR EACH PROCESS ENTERED HERE INCLUDE DESIGN CAPACITY.

IV. DESCRIPTION OF HAZARDOUS WASTES

A. EPA HAZARDOUS WASTE NUMBER — Enter the four–digit number from 40 CFR, Subpart D for each listed hazardous waste you will handle. If you handle hazardous wastes which are not listed in 40 CFR, Subpart D, enter the four–digit number*(s)* from 40 CFR, Subpart C that describes the characteristics and/or the toxic contaminants of those hazardous wastes.

B. ESTIMATED ANNUAL QUANTITY — For each **listed waste** entered in column A estimate the quantity of that waste that will be handled on an annual basis. For each **characteristic** or **toxic contaminant** entered in column A estimate the total annual quantity of all the non–listed waste*(s)* that will be handled which possess that characteristic or contaminant.

C. UNIT OF MEASURE — For each quantity entered in column B enter the unit of measure code. Units of measure which must be used and the appropriate codes are:

ENGLISH UNIT OF MEASURE	CODE	METRIC UNIT OF MEASURE	CODE
POUNDS	P	KILOGRAMS	K
TONS	T	METRIC TONS	M

If facility records use any other unit of measure for quantity, the units of measure must be converted into one of the required units of measure taking into account the appropriate density or specific gravity of the waste.

D. PROCESSES

1. PROCESS CODES:
   For **listed** hazardous waste: For each **listed** hazardous waste entered in column A select the code*(s)* from the list of process codes contained in **Item III** to indicate how the waste will be stored, treated, and/or disposed of at the facility.
   For non–listed hazardous wastes: For each characteristic or toxic contaminant entered in column A, select the code*(s)* from the list of process codes contained in Item III to indicate all the processes that will be used to store, treat, and/or dispose of all the non–listed hazardous wastes that possess that characteristic or toxic contaminant.
   Note: Four spaces are provided for entering process codes. If more are needed: (1) Enter the first three as described above; (2) Enter "000" in the extreme right box of Item IV-D(1); and (3) Enter in the space provided on page 4, the line number and the additional code*(s)*.

2. PROCESS DESCRIPTION: If a code is not listed for a process that will be used, describe the process in the space provided on the form.

NOTE: HAZARDOUS WASTES DESCRIBED BY MORE THAN ONE EPA HAZARDOUS WASTE NUMBER — Hazardous wastes that can be described by more than one EPA Hazardous Waste Number shall be described on the form as follows:

1. Select one of the EPA Hazardous Waste Numbers and enter it in column A. On the same line complete columns B,C, and D by estimating the total annual quantity of the waste and describing all the processes to be used to treat, store, and/or dispose of the waste.
2. In column A of the next line enter the other EPA Hazardous Waste Number that can be used to describe the waste. In column D(2) on that line enter "included with above" and make no other entries on that line.
3. Repeat step 2 for each other EPA Hazardous Waste Number that can be used to describe the hazardous waste.

EXAMPLE FOR COMPLETING ITEM IV *(shown in line numbers X-1, X-2, X-3, and X-4 below)* — A facility will treat and dispose of an estimated 900 pounds per year of chrome shavings from leather tanning and finishing operation. In addition, the facility will treat and dispose of three non–listed wastes. Two wastes are corrosive only and there will be an estimated 200 pounds per year of each waste. The other waste is corrosive and ignitable and there will be an estimated 100 pounds per year of that waste. Treatment will be in an incinerator and disposal will be in a landfill.

LINE NO.	A. EPA HAZARD. WASTE NO. (enter code)	B. ESTIMATED ANNUAL QUANTITY OF WASTE	C. UNIT OF MEASURE (enter code)	D. PROCESSES 1. PROCESS CODES (enter)	D. PROCESSES 2. PROCESS DESCRIPTION (if a code is not entered in D(1))
X-1	K 0 5 4	900	P	T 0 3 D 8 0	
X-2	D 0 0 2	400	P	T 0 3 D 8 0	
X-3	D 0 0 1	100	P	T 0 3 D 8 0	
X-4	D 0 0 2				included with above

CONTINUE ON PAGE 3

Continued from page 2.

NOTE: Photocopy this page before completing if you have more than 26 wastes to list.

Form Approved OMB No. 158-S80004

EPA I.D. NUMBER (enter from page 1)													T/A	C	FOR OFFICIAL USE ONLY													T/A	C	
S	W	M	I	D	0	0	6	0	1	6	9	1	9		1	S	W												2	
1	2											13	14	15		1	2											13	14	15	

DUP DUP

IV. DESCRIPTION OF HAZARDOUS WASTES *(continued)*

LINE NO.	A. EPA HAZARD. WASTE NO. (enter code)	B. ESTIMATED ANNUAL QUANTITY OF WASTE	C. UNIT OF MEASURE (enter code)	D. PROCESSES 1. PROCESS CODES (enter)	D. PROCESSES 2. PROCESS DESCRIPTION (if a code is not entered in D(1))
	23 - 26	27 - 35	36	27 - 28 / 29 / 30 / 31	
1	F 0 0 1	32,000	P	S 0 2	
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					

EPA Form 3510-3 (6-80)

CONTINUE ON REVERSE

(enter "A", "B", "C", etc. behind the "3" to identify photocopied pages)

Continued from the front.

V. DESCRIPTION OF HAZARDOUS WASTE (continued)

E. USE THIS SPACE TO LIST ADDITIONAL PROCESS CODES FROM ITEM D(1) ON PAGE 3.

EPA I.D. NO. (enter from page 1)

M	I	D	0	0	6	0	1	6	9	1	9	T/A	C	6

V. FACILITY DRAWING

All existing facilities must include in the space provided on page 5 a scale drawing of the facility *(see instructions for more detail).*

VI. PHOTOGRAPHS

All existing facilities must include photographs *(aerial or ground—level)* that clearly delineate all existing structures; existing storage, treatment and disposal areas; and sites of future storage, treatment or disposal areas *(see instructions for more detail).*

VII. FACILITY GEOGRAPHIC LOCATION

LATITUDE (degrees, minutes, & seconds)	LONGITUDE (degrees, minutes, & seconds)
43 56 30	86 25 20

VIII. FACILITY OWNER

[X] A. If the facility owner is also the facility operator as listed in Section VIII on Form 1, "General Information", place an "X" in the box to the left and skip to Section IX below.

B. If the facility owner is not the facility operator as listed in Section VIII on Form 1, complete the following items:

1. NAME OF FACILITY'S LEGAL OWNER	2. PHONE NO. (area code & no.)

3. STREET OR P.O. BOX	4. CITY OR TOWN	5. ST.	6. ZIP CODE
	C G		

IX. OWNER CERTIFICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

A. NAME (print or type)	B. SIGNATURE	C. DATE SIGNED
E. A. ROZAS, DIVISION MANAGER D. M. HANNEGAN, PLANT MANAGER	E A Rozas D M Hannegan	7 NOV 80 11-4-80

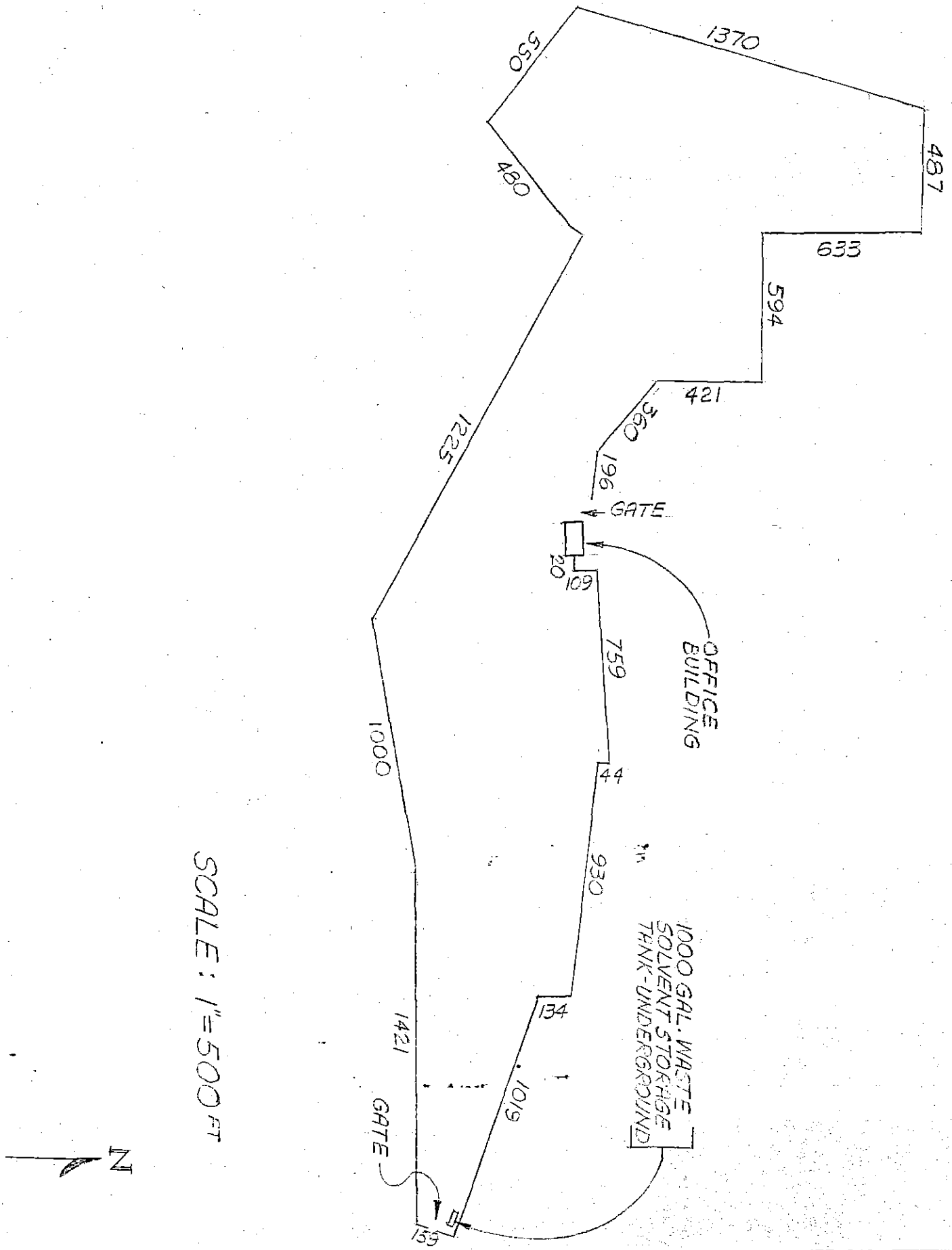
X. OPERATOR CERTIFICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

A. NAME (print or type)	B. SIGNATURE	C. DATE SIGNED

Form Approved OMB No. 158-S80004

V. FACILITY DRAWING *(see page 4)*



HWM THE DOW CHEMICAL CO. LUDINGTON PLANT

DOW CHEMICAL U.S.A.

November 7, 1980

CENTRAL DIVISION
P.O. BOX 36000
STRONGSVILLE, OHIO 44136

EPA Region V
RCRA Activities
P. O. Box 7861
Chicago, IL 60680

Gentlemen:

This is to certify that the Plant Manager of the Ludington Plant, Central Division of Dow Chemical U.S.A. has overall responsibility for the operation of that facility and activity, and is duly authorized to sign all reports and permits required by the regulations implementing the Hazardous Waste Management Program under the Resource Conservation and Recovery Act (RCRA), the Underground Injection Control (UIC) Program under the Safe Drinking Water Act (SDWA), the National Pollutant Discharge Eliminations System (NPDES) Program and State Dredge or Fill ("404") Programs under the Clean Water Act (CWA), and the Prevention of Significant Deterioration (PSD) Program under the Clean Air Act (CAA), and other information requested by the Director. This authorization is made by me in my capacity as authorized signatory for The Dow Chemical Company as defined in 45 C.F.R. 521249.

E. A. Rozas
Division Manager

lh

DOW CHEMICAL U.S.A.

LUDINGTON, MICHIGAN 49431

616 · 845-4411

7 November 1980

EPA Region V
RCRA Activities
P. O. Box 7861
Chicago, IL 60680

Gentlemen:

In compliance with permit application requirements under the Resource Conservation and Recovery Act, attached is RCRA Permit Application Part A (Forms 1 & 3) covering hazardous waste activities at our location.

This is a new and complicated regulatory scheme, and the data presented herein has been developed and submitted in good faith. With no prior history or experience with this regulation, interpretation errors are possible. Our intent has been to fully comply with these regulations. Should there be interpretation differences, we will be readily available to discuss these with the Agency to clarify any potential discrepancies.

Included in this permit application are the designated locations, which we consider "storage" areas within the meaning and intent of the statute. Due to the ambiguity in the regulations as to exactly what areas should and should not be considered "storage", we attempted to apply a "rule of reason." By doing so, we did not designate the numerous locations where small quantities of waste are temporarily accumulated prior to being removed to a storage area. We understand the Agency will clarify this ambiguity in the near future.

Should the Agency's clarification be inconsistent with the above outlined approach, then we would by this notification amend our permit application to include the entire area of the facility as "storage."

Incineration devices which incinerate hazardous wastes where the hazardous wastes are being burned as a fuel for the recovery of usable energy (261.2(c)(2)) were not included in the permit application.

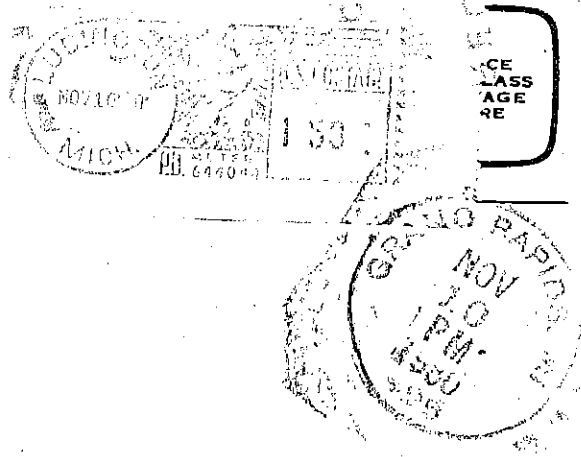
Additional capacity was included in the facility capacity to handle solid waste generated as a result of the treatment storage and disposal of a hazardous waste and is, therefore, hazardous by rule (261.3(c)(2)). These waste streams have not been specifically itemized since they are included by definition and the Agency has not been assigned a specific waste number for these wastes.

Don Hannegan
Plant Manager

FOLD, MOISTEN, AND SEAL

CK MASKAL

E DOW CHEMICAL CO.
MADISON AND SEVENTH
DINGTON, MI. 49431

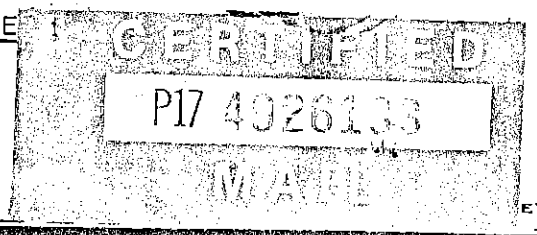


EPA - REGION V
RCRA ACTIVITIES
P.O. BOX 7861
CHICAGO, IL 60680

TIFIED MAIL

JRN RECEIPT RE

ARDOUS WASTE
IT APPLICATION



DETACH ALONG THIS LINE

Please print or type in the unshaded areas only
(fill—in areas are spaced for elite type, i.e., 12 characters/inch).

Form Approved OMB No. 158-R0175 356

FORM 1 GENERAL

U.S. ENVIRONMENTAL PROTECTION AGENCY

GENERAL INFORMATION

Consolidated Permits Program

(Read the "General Instructions" before starting.)

I. EPA I.D. NUMBER: F MID006016919 (F/A: 2, C: D)

LABEL ITEMS

I. EPA I.D. NUMBER

III. FACILITY NAME

V. FACILITY MAILING ADDRESS

VI. FACILITY LOCATION

MID006016919

~~DOW CHEMICAL CO.~~

S MADISON & SEVENTH
LUDINGTON, MI 49431

S MADISON & SEVENTH
LUDINGTON, MI 49431

GENERAL INSTRUCTIONS

If a preprinted label has been provided, affix it in the designated space. Review the information carefully; if any of it is incorrect, cross through it and enter the correct data in the appropriate fill—in area below. Also, if any of the preprinted data is absent *(the area to the left of the label space lists the information that should appear)*, please provide it in the proper fill—in area(s) below. If the label is complete and correct, you need not complete Items I, III, V, and VI *(except VI-B which must be completed regardless)*. Complete all items if no label has been provided. Refer to the instructions for detailed item descriptions and for the legal authorizations under which this data is collected.

II. POLLUTANT CHARACTERISTICS

INSTRUCTIONS: Complete A through J to determine whether you need to submit any permit application forms to the EPA. If you answer "yes" to any questions, you must submit this form and the supplemental form listed in the parenthesis following the question. Mark "X" in the box in the third column if the supplemental form is attached. If you answer "no" to each question, you need not submit any of these forms. You may answer "no" if your activity is excluded from permit requirements; see Section C of the instructions. See also, Section D of the instructions for definitions of **bold—faced** terms.

SPECIFIC QUESTIONS	MARK 'X' YES	NO	FORM ATTACHED
A. Is this facility a **publicly owned treatment works** which results in a **discharge to waters of the U.S.**? (FORM 2A)		X	
B. Does or will this facility *(either existing or proposed)* include a **concentrated animal feeding operation** or **aquatic animal production facility** which results in a **discharge to waters of the U.S.**? (FORM 2B)		X	
C. Is this a facility which currently results in **discharges to waters of the U.S.** other than those described in A or B above? (FORM 2C)	X		NA
D. Is this a proposed facility *(other than those described in A or B above)* which will result in a discharge to waters of the U.S.? (FORM 2D)		X	
E. Does or will this facility treat, store, or dispose of **hazardous wastes**? (FORM 3)	X		X
F. Do you or will you inject at this facility industrial or municipal effluent below the lowermost stratum containing, within one quarter mile of the well bore, underground sources of drinking water? (FORM 4)	X		NA
G. Do you or will you inject at this facility any produced water or other fluids which are brought to the surface in connection with conventional oil or natural gas production, inject fluids used for enhanced recovery of oil or natural gas, or inject fluids for storage of liquid hydrocarbons? (FORM 4)		X	
H. Do you or will you inject at this facility fluids for special processes such as mining of sulfur by the Frasch process, solution mining of minerals, in situ combustion of fossil fuel, or recovery of geothermal energy? (FORM 4)		X	
I. Is this facility a proposed **stationary source** which is one of the 28 industrial categories listed in the instructions and which will potentially emit 100 tons per year of any air pollutant regulated under the Clean Air Act and may affect or be located in an attainment area? (FORM 5)		X	
J. Is this facility a proposed **stationary source** which is NOT one of the 28 industrial categories listed in the instructions and which will potentially emit 250 tons per year of any air pollutant regulated under the Clean Air Act and may affect or be located in an **attainment area**? (FORM 5)		X	

III. NAME OF FACILITY

1 SKIP: DOW CHEMICAL CO. LUDINGTON PLANT

IV. FACILITY CONTACT

A. NAME & TITLE *(last, first, & title)*	B. PHONE *(area code & no.)*
2 MASKAL JACK ENVIRON SPECIALIST	616 845 4378

V. FACILITY MAILING ADDRESS

A. STREET OR P.O. BOX			
3			
B. CITY OR TOWN	**C. STATE**	**D. ZIP CODE**	
4			

VI. FACILITY LOCATION

A. STREET, ROUTE NO. OR OTHER SPECIFIC IDENTIFIER			
5			
B. COUNTY NAME			
MASON			
C. CITY OR TOWN	**D. STATE**	**E. ZIP CODE**	**F. COUNTY CODE** *(if known)*
6			053

CONTINUE ON REVERSE

ONTINUED FROM THE FRONT

II. SIC CODES (4-digit, in order of priority)

A. FIRST	B. SECOND
2810 (specify) INDUSTRIAL INORGANIC CHEMICALS	C 7 3274 (specify) LIME
C. THIRD	**D. FOURTH**
(specify)	C 7 (specify)

III. OPERATOR INFORMATION

A. NAME: THE DOW CHEMICAL COMPANY

B. Is the name listed in Item VIII-A also the owner? [X] YES [ ] NO

C. STATUS OF OPERATOR (Enter the appropriate letter into the answer box; if "Other", specify.)
F = FEDERAL; S = STATE; P = PRIVATE; M = PUBLIC (other than federal or state); O = OTHER (specify)
P (specify)

D. PHONE (area code & no.): C A 616 845 4411

E. STREET OR P.O. BOX: MADISON AND SEVENTH

F. CITY OR TOWN: LUDINGTON

G. STATE: MI

H. ZIP CODE: 49431

IV. INDIAN LAND

Is the facility located on Indian lands? [ ] YES [X] NO

V. EXISTING ENVIRONMENTAL PERMITS

A. NPDES (Discharges to Surface Water): N MI0003026

D. PSD (Air Emissions from Proposed Sources): C 9 P

B. UIC (Underground Injection of Fluids): U MI0003026

C 9

E. OTHER (specify)

(specify) SEE ATTACHED SHEET

C. RCRA (Hazardous Wastes): R

E. OTHER (specify): C 9

(specify)

VI. MAP

Attach to this application a topographic map of the area extending to at least one mile beyond property bounderies. The map must show the outline of the facility, the location of each of its existing and proposed intake and discharge structures, each of its hazardous waste treatment, storage, or disposal facilities, and each well where it injects fluids underground. Include all springs, rivers and other surface water bodies in the map area. See instructions for precise requirements.

VII. NATURE OF BUSINESS (provide a brief description)

MANUFACTURE OF INORGANIC CHEMICALS FROM NATURAL BRINES AND DOLOMITIC LIMESTONE AND PURCHASED INORGANIC MATERIALS. PRODUCTS ARE CALCIUM CHLORIDE, MAGNESIUM CHLORIDE, MAGNESIUM HYDROXIDE, BROMINE, AND CATALYSTS.

VIII. CERTIFICATION (see instructions)

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this application and all attachments and that, based on my inquiry of those persons immediately responsible for obtaining the information contained in the application, I believe that the information is true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

A. NAME & OFFICIAL TITLE (type or print)	B. SIGNATURE	C. DATE SIGNED
E. A. ROZAS, DIVISION MANAGER D. M. HANNEGAN, PLANT MANAGER		4 Nov 80 Nov 4, 1980

COMMENTS FOR OFFICIAL USE ONLY

(fill—in areas are spaced for elite type, i.e., 12 characters/inch).

Form Approved OMB No. 158-S80004

FORM 3 RCRA

U.S. ENVIRONMENTAL PROTECTION AGENCY

HAZARDOUS WASTE PERMIT APPLICATION

Consolidated Permits Program

(This information is required under Section 3005 of RCRA.)

I. EPA I.D. NUMBER

S													T/A	C
F	M	I	D	0	0	6	0	1	6	9	1	9		1
1	2											13	14	15

FOR OFFICIAL USE ONLY

APPLICATION APPROVED	DATE RECEIVED (yr., mo., & day)	COMMENTS
23	24 - 29	

II. FIRST OR REVISED APPLICATION

Place an "X" in the appropriate box in A or B below *(mark one box only)* to indicate whether this is the first application you are submitting for your facility or a revised application. If this is your first application and you already know your facility's EPA I.D. Number, or if this is a revised application, enter your facility's EPA I.D. Number in Item I above.

A. FIRST APPLICATION *(place an "X" below and provide the appropriate date)*

[X] 1. EXISTING FACILITY *(See instructions for definition of "existing" facility. Complete item below.)* (71)

C 8 (15)

YR.	MO.	DAY
6 2 (73 74)	1 0 (75 76)	3 0 (77 78)

FOR EXISTING FACILITIES, PROVIDE THE DATE *(yr., mo., & day)* OPERATION BEGAN OR THE DATE CONSTRUCTION COMMENCED *(use the boxes to the left)*

[ ] 2. NEW FACILITY *(Complete item below.)* (71)

YR.	MO.	DAY
(73 74)	(75 76)	(77 78)

FOR NEW FACILITIES, PROVIDE THE DATE *(yr., mo., & day)* OPERATION BEGAN OR IS EXPECTED TO BEGIN

B. REVISED APPLICATION *(place an "X" below and complete Item I above)*

[ ] 1. FACILITY HAS INTERIM STATUS (72)

[ ] 2. FACILITY HAS A RCRA PERMIT (72)

III. PROCESSES – CODES AND DESIGN CAPACITIES

A. PROCESS CODE – Enter the code from the list of process codes below that best describes each process to be used at the facility. Ten lines are provided for entering codes. If more lines are needed, enter the code(s) in the space provided. If a process will be used that is not included in the list of codes below, then describe the process *(including its design capacity)* in the space provided on the form *(Item III-C)*.

B. PROCESS DESIGN CAPACITY – For each code entered in column A enter the capacity of the process.

1. AMOUNT – Enter the amount.
2. UNIT OF MEASURE – For each amount entered in column B(1), enter the code from the list of unit measure codes below that describes the unit of measure used. Only the units of measure that are listed below should be used.

PROCESS	PROCESS CODE	APPROPRIATE UNITS OF MEASURE FOR PROCESS DESIGN CAPACITY
Storage:		
CONTAINER *(barrel, drum, etc.)*	S01	GALLONS OR LITERS
TANK	S02	GALLONS OR LITERS
WASTE PILE	S03	CUBIC YARDS OR CUBIC METERS
SURFACE IMPOUNDMENT	S04	GALLONS OR LITERS
Disposal:		
INJECTION WELL	D79	GALLONS OR LITERS
LANDFILL	D80	ACRE-FEET *(the volume that would cover one acre to a depth of one foot)* OR HECTARE-METER
LAND APPLICATION	D81	ACRES OR HECTARES
OCEAN DISPOSAL	D82	GALLONS PER DAY OR LITERS PER DAY
SURFACE IMPOUNDMENT	D83	GALLONS OR LITERS
Treatment:		
TANK	T01	GALLONS PER DAY OR LITERS PER DAY
SURFACE IMPOUNDMENT	T02	GALLONS PER DAY OR LITERS PER DAY
INCINERATOR	T03	TONS PER HOUR OR METRIC TONS PER HOUR; GALLONS PER HOUR OR LITERS PER HOUR
OTHER *(Use for physical, chemical, thermal or biological treatment processes not occurring in tanks, surface impoundments or incinerators. Describe the processes in the space provided; Item III-C.)*	T04	GALLONS PER DAY OR LITERS PER DAY

UNIT OF MEASURE	UNIT OF MEASURE CODE
GALLONS	G
LITERS	L
CUBIC YARDS	Y
CUBIC METERS	C
GALLONS PER DAY	U
LITERS PER DAY	V
TONS PER HOUR	D
METRIC TONS PER HOUR	W
GALLONS PER HOUR	E
LITERS PER HOUR	H
ACRE-FEET	A
HECTARE-METER	F
ACRES	B
HECTARES	Q

EXAMPLE FOR COMPLETING ITEM III *(shown in line numbers X-1 and X-2 below)*: A facility has two storage tanks, one tank can hold 200 gallons and the other can hold 400 gallons. The facility also has an incinerator that can burn up to 20 gallons per hour.

S													T/A	C
C	D	U	P											1
1	2											13	14	15

LINE NUMBER	A. PROCESS CODE (from list above) (16 - 18)	B. PROCESS DESIGN CAPACITY 1. AMOUNT (specify) (19 - 27)	B. PROCESS DESIGN CAPACITY 2. UNIT OF MEASURE (enter code) (28)	FOR OFFICIAL USE ONLY (29 - 32)
X-1	S 0 2	600	G	
X-2	T 0 3	20	E	
1	S 0 2	1000	G	
2				
3				
4				

LINE NUMBER	A. PROCESS CODE (from list above) (16 - 18)	B. PROCESS DESIGN CAPACITY 1. AMOUNT (19 - 27)	B. PROCESS DESIGN CAPACITY 2. UNIT OF MEASURE (enter code) (28)	FOR OFFICIAL USE ONLY (29 - 32)
5				
6				
7				
8				
9				
10				

Continued from the front.

III. PROCESSES *(continued)*

C. SPACE FOR ADDITIONAL PROCESS CODES OR DESCRIBING OTHER PROCESSES *(code "T0" FOR EACH PROCESS ENTERED HERE* INCLUDE DESIGN CAPACITY.

IV. DESCRIPTION OF HAZARDOUS WASTES

A. EPA HAZARDOUS WASTE NUMBER — Enter the four–digit number from 40 CFR, Subpart D for each listed hazardous waste you will handle. If you handle hazardous wastes which are not listed in 40 CFR, Subpart D, enter the four–digit number*(s)* from 40 CFR, Subpart C that describes the characteristics and/or the toxic contaminants of those hazardous wastes.

B. ESTIMATED ANNUAL QUANTITY — For each **listed waste** entered in column A estimate the quantity of that waste that will be handled on an annual basis. For each **characteristic** or **toxic contaminant** entered in column A estimate the total annual quantity of all the non–listed waste*(s)* that will be handled which possess that characteristic or contaminant.

C. UNIT OF MEASURE — For each quantity entered in column B enter the unit of measure code. Units of measure which must be used and the appropriate codes are:

ENGLISH UNIT OF MEASURE	CODE	METRIC UNIT OF MEASURE	CODE
POUNDS	P	KILOGRAMS	K
TONS	T	METRIC TONS	M

If facility records use any other unit of measure for quantity, the units of measure must be converted into one of the required units of measure taking into account the appropriate density or specific gravity of the waste.

D. PROCESSES

1. PROCESS CODES:

For listed hazardous waste: For each **listed** hazardous waste entered in column A select the code*(s)* from the list of process codes contained in Item III to indicate how the waste will be stored, treated, and/or disposed of at the facility.

For non–listed hazardous wastes: For each characteristic or toxic contaminant entered in column A, select the code*(s)* from the list of process codes contained in Item III to indicate **all** the processes that will be used to store, treat, and/or dispose of all the non–listed hazardous wastes that possess that characteristic or toxic contaminant.

Note: Four spaces are provided for entering process codes. If more are needed: (1) Enter the first three as described above; (2) Enter "000" in the extreme right box of Item IV-D(1); and (3) Enter in the space provided on page 4, the line number and the additional code*(s)*.

2. PROCESS DESCRIPTION: If a code is not listed for a process that will be used, describe the process in the space provided on the form.

NOTE: **HAZARDOUS WASTES DESCRIBED BY MORE THAN ONE EPA HAZARDOUS WASTE NUMBER** — Hazardous wastes that can be described by more than one EPA Hazardous Waste Number shall be described on the form as follows:

1. Select one of the EPA Hazardous Waste Numbers and enter it in column A. On the same line complete columns B, C, and D by estimating the total annual quantity of the waste and describing all the processes to be used to treat, store, and/or dispose of the waste.
2. In column A of the next line enter the other EPA Hazardous Waste Number that can be used to describe the waste. In column D(2) on that line enter "included with above" and make no other entries on that line.
3. Repeat step 2 for each other EPA Hazardous Waste Number that can be used to describe the hazardous waste.

EXAMPLE FOR COMPLETING ITEM IV *(shown in line numbers X-1, X-2, X-3, and X-4 below)* — A facility will treat and dispose of an estimated 900 pounds per year of chrome shavings from leather tanning and finishing operation. In addition, the facility will treat and dispose of three non–listed wastes. Two wastes are corrosive only and there will be an estimated 200 pounds per year of each waste. The other waste is corrosive and ignitable and there will be an estimated 100 pounds per year of that waste. Treatment will be in an incinerator and disposal will be in a landfill.

LINE NO	A. EPA HAZARD. WASTE NO *(enter code)*	B. ESTIMATED ANNUAL QUANTITY OF WASTE	C. UNIT OF MEASURE *(enter code)*	D. PROCESSES 1. PROCESS CODES *(enter)*	D. PROCESSES 2. PROCESS DESCRIPTION *(if a code is not entered in D(1))*
X-1	K 0 5 4	900	P	T 0 3 D 8 0	
X-2	D 0 0 2	400	P	T 0 3 D 8 0	
X-3	D 0 0 1	100	P	T 0 3 D 8 0	
X-4	D 0 0 2				*included with above*

ontinued from the front.

V. DESCRIPTION OF HAZARDOUS WASTES (continued)

E. USE THIS SPACE TO LIST ADDITIONAL PROCESS CODES FROM ITEM D(1) ON PAGE

EPA I.D. NO. (enter from page 1)

													T/A	C
M	I	D	0	0	6	0	1	6	9	1	9			6
2											13		14	15

V. FACILITY DRAWING

All existing facilities must include in the space provided on page 5 a scale drawing of the facility *(see instructions for more detail).*

VI. PHOTOGRAPHS

All existing facilities must include photographs *(aerial or ground–level)* that clearly delineate all existing structures; existing storage, treatment and disposal areas; and sites of future storage, treatment or disposal areas *(see instructions for more detail).*

VII. FACILITY GEOGRAPHIC LOCATION

LATITUDE (degrees, minutes, & seconds)						LONGITUDE (degrees, minutes, & seconds)					
4	3	5	6		3 0		8	6	2	5			2 0
65	66	67	68	69	- 71		72	- 74	75	76	77	-	79

VIII. FACILITY OWNER

☒ A. If the facility owner is also the facility operator as listed in Section VIII on Form 1, "General Information", place an "X" in the box to the left and skip to Section IX below.

B. If the facility owner is not the facility operator as listed in Section VIII on Form 1, complete the following items:

1. NAME OF FACILITY'S LEGAL OWNER		2. PHONE NO. (area code & no.)
		- -
16 - 55		56 - 58 59 - 61 62 - 65

3. STREET OR P.O. BOX	4. CITY OR TOWN	5. ST.	6. ZIP CODE
	C G		
15 - 45	15 16 - 40	41 42	47 - 51

IX. OWNER CERTIFICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

A. NAME (print or type)	B. SIGNATURE	C. DATE SIGNED
E. A. ROZAS, DIVISION MANAGER D. M. HANNEGAN, PLANT MANAGER	E A Rozas D M Hannegan	7 16 80 11-6-80

X. OPERATOR CERTIFICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

A. NAME (print or type)	B. SIGNATURE	C. DATE SIGNED

Continued from page 2.
NOTE: Photocopy this page before completing if you have more than 26 wastes to list.

Form Approved OMB No. 158-S80004

EPA I.D. NUMBER (enter from page 1): W M I D 0 0 6 0 1 6 9 1 9 | T/A | C: 1

FOR OFFICIAL USE ONLY: W | DUP | T/A | C: 2 | DUP

IV. DESCRIPTION OF HAZARDOUS WASTES (continued)

LINE NO.	A. EPA HAZARD. WASTE NO. (enter code)	B. ESTIMATED ANNUAL QUANTITY OF WASTE	C. UNIT OF MEASURE (enter code)	D. PROCESSES 1. PROCESS CODES (enter)	D. PROCESSES 2. PROCESS DESCRIPTION (if a code is not entered in D(1))
1	F 0 0 1	32,000	P	S 0 2	
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					

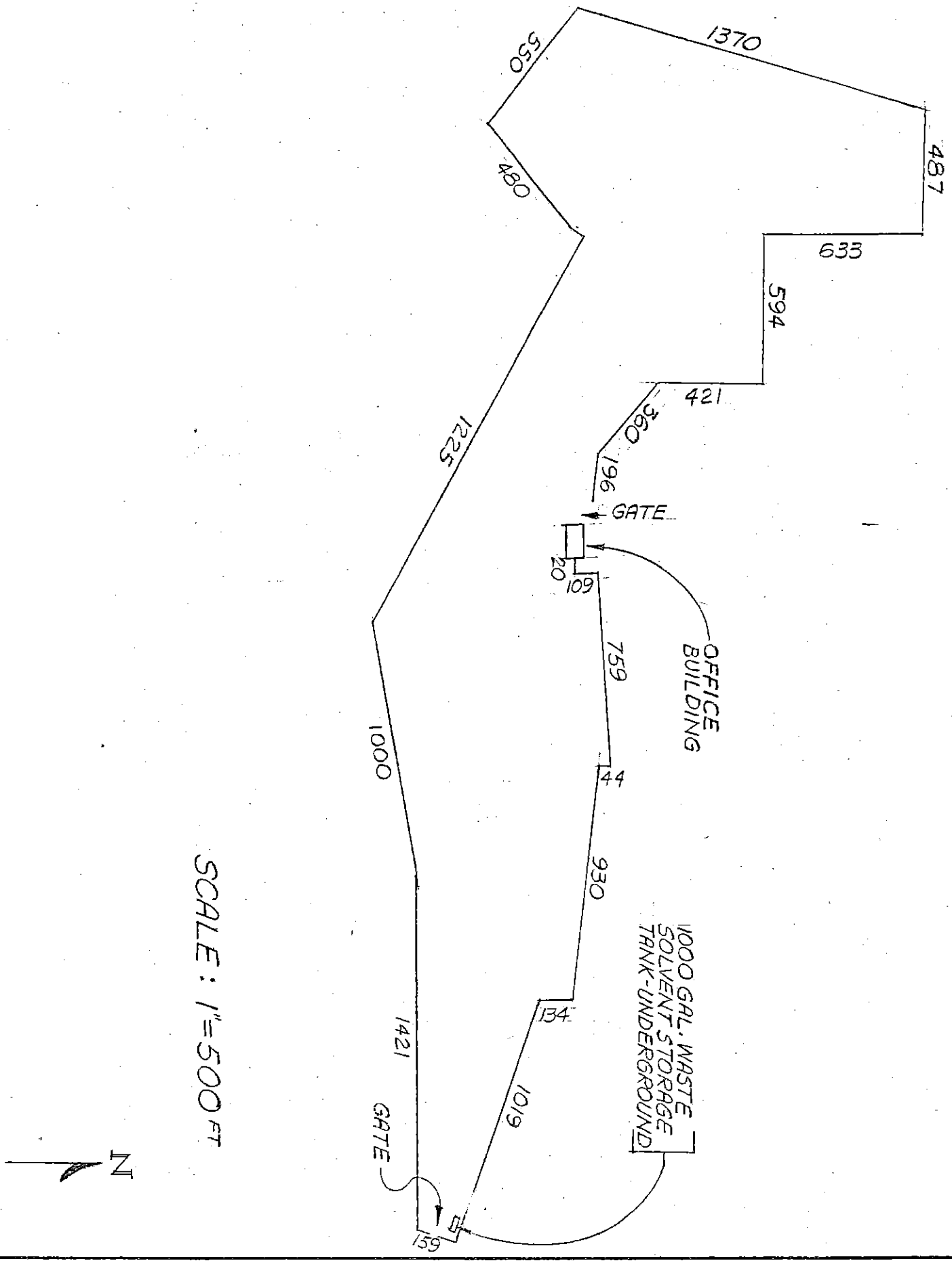
EPA Form 3510-3 (6-80)

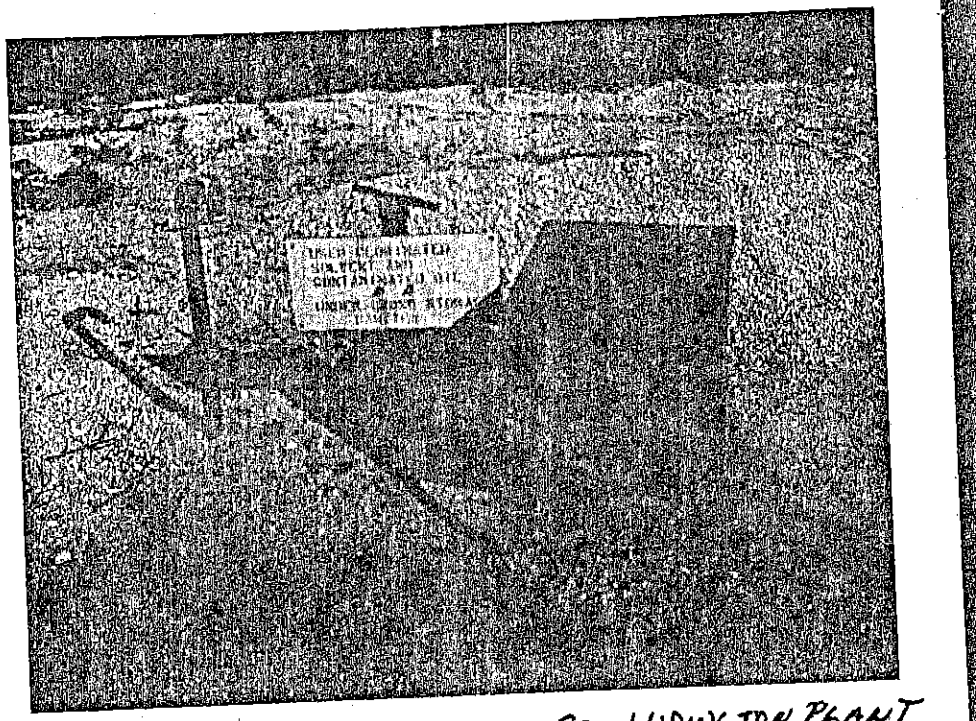
CONTINUE ON REVERSE

(enter "A", "B", "C", etc. behind the "3" to identify photocopied pages)

Form Approved OMB No. 158-S80004

V. FACILITY DRAWING *(see page 4)*





HWM THE DOW CHEMICAL CO. LUDINGTON PLANT

DOW CHEMICAL U.S.A.

ITEM 1 CONSOLIDATED PERMITS PROGRAM EPA ID NUMBER
MID006016919

ITEM NO. X-E EXISTING ENVIRONMENTAL PERMITS

AIR USE PERMITS FOR POINT SOURCES ISSUED

BY THE STATE OF MICHIGAN TO:

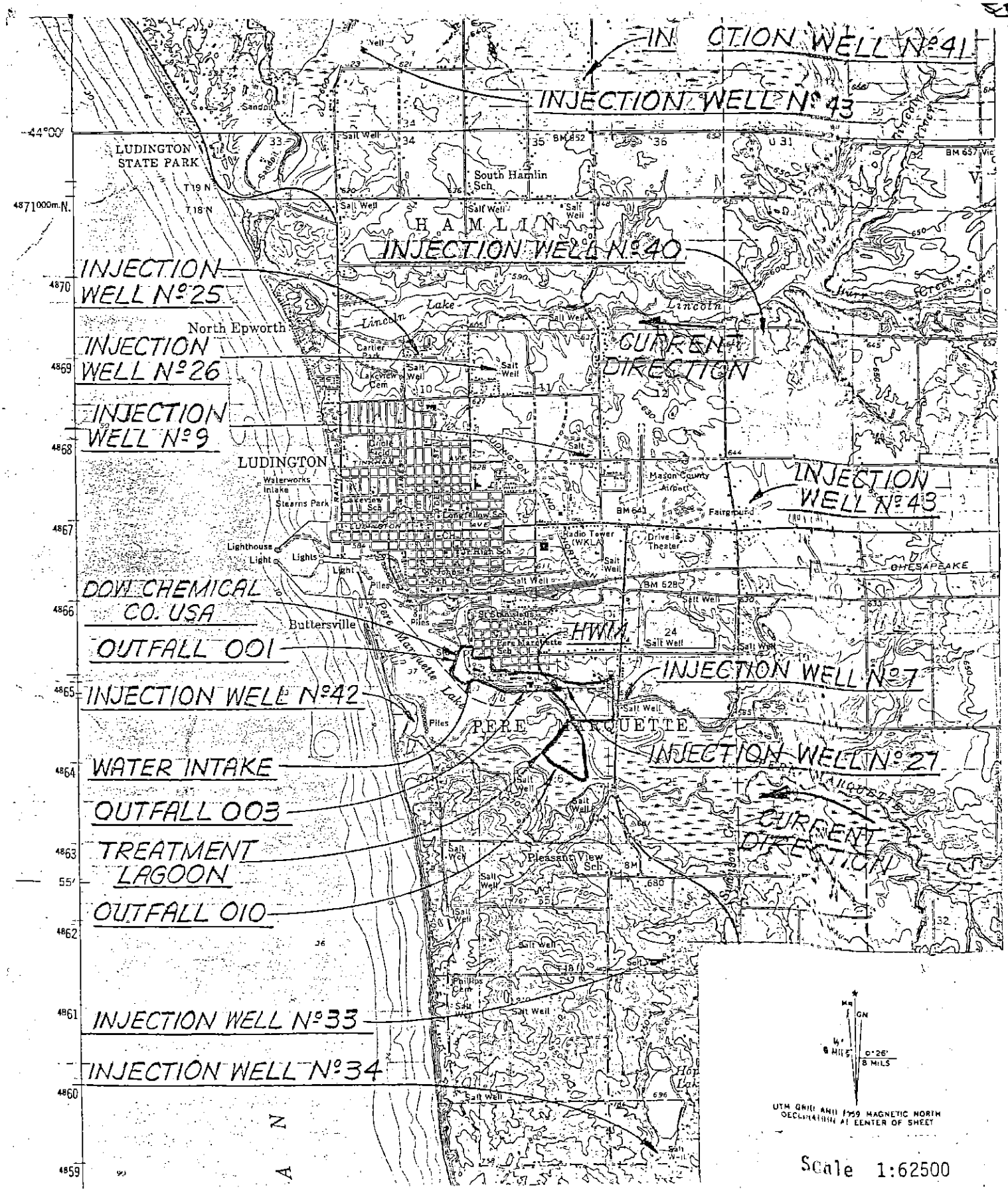
THE DOW CHEMICAL COMPANY

LUDINGTON PLANT

STATE PERMIT NUMBERS

31 - 72
252 - 72
251 - 73
396 - 73
416 - 73
341 - 74
342 - 74
343 - 74
37 - 75
149 - 75
256 - 76
362 - 76
290 - 77
849 - 77
416 - 78
382 - 79

...should t... ...ambiguity ...ea. We ...arily ac... ...ocati... ...ason." ...uered



UTM GRID AND 1959 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET

Scale 1:62500

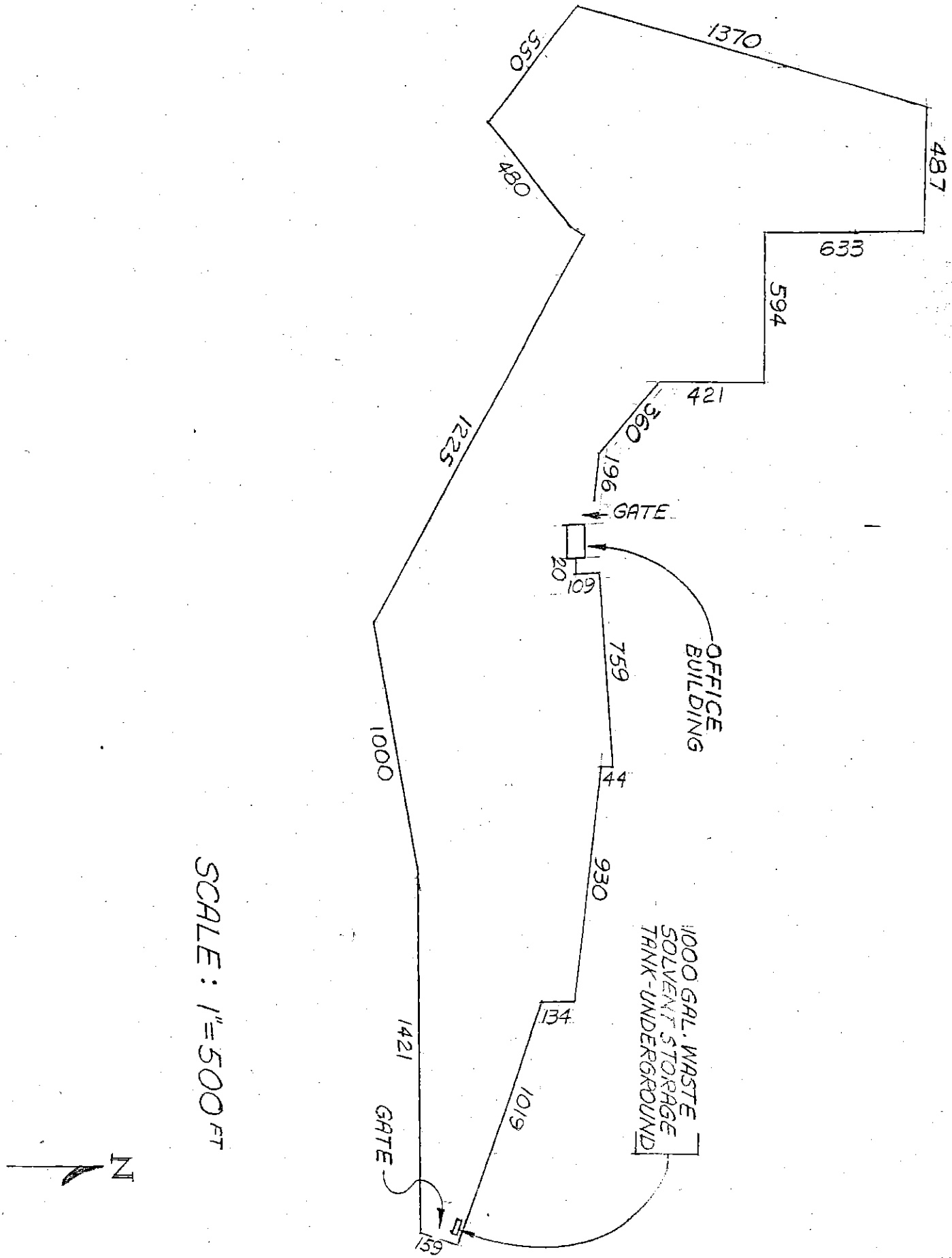
Location Map

Dow Chemical Co. USA
Ludington, Michigan

SK-A-1269

Form Approved OMB No. 158-S80004

V. FACILITY DRAWING *(see page 4)*



DOW CHEMICAL U.S.A.

LUDINGTON, MICHIGAN 49431

616 · 845-4411

7 November 1980

EPA Region V
RCRA Activities
P. O. Box 7861
Chicago, IL 60680

Gentlemen:

In compliance with permit application requirements under the Resource Conservation and Recovery Act, attached is RCRA Permit Application Part A (Forms 1 & 3) covering hazardous waste activities at our location.

This is a new and complicated regulatory scheme, and the data presented herein has been developed and submitted in good faith. With no prior history or experience with this regulation, interpretation errors are possible. Our intent has been to fully comply with these regulations. Should there be interpretation differences, we will be readily available to discuss these with the Agency to clarify any potential discrepancies.

Included in this permit application are the designated locations, which we consider "storage" areas within the meaning and intent of the statute. Due to the ambiguity in the regulations as to exactly what areas should and should not be considered "storage", we attempted to apply a "rule of reason." By doing so, we did not designate the numerous locations where small quantities of waste are temporarily accumulated prior to being removed to a storage area. We understand the Agency will clarify this ambiguity in the near future.

Should the Agency's clarification be inconsistent with the above outlined approach, then we would by this notification amend our permit application to include the entire area of the facility as "storage."

Incineration devices which incinerate hazardous wastes where the hazardous wastes are being burned as a fuel for the recovery of usable energy (261.2(c)(2)) were not included in the permit application.

Additional capacity was included in the facility capacity to handle solid waste generated as a result of the treatment storage and disposal of a hazardous waste and is, therefore, hazardous by rule (261.3(c)(2)). These waste streams have not been specifically itemized since they are included by definition and the Agency has not been assigned a specific waste number for these wastes.

Don Hannegan
Plant Manager

DOW CHEMICAL U.S.A.

November 7, 1980

CENTRAL DIVISION
P.O. BOX 36000
STRONGSVILLE, OHIO 44136

EPA Region V
RCRA Activities
P. O. Box 7861
Chicago, IL 60680

Gentlemen:

This is to certify that the Plant Manager of the Ludington Plant, Central Division of Dow Chemical U.S.A. has overall responsibility for the operation of that facility and activity, and is duly authorized to sign all reports and permits required by the regulations implementing the Hazardous Waste Management Program under the Resource Conservation and Recovery Act (RCRA), the Underground Injection Control (UIC) Program under the Safe Drinking Water Act (SDWA), the National Pollutant Discharge Eliminations System (NPDES) Program and State Dredge or Fill ("404") Programs under the Clean Water Act (CWA), and the Prevention of Significant Deterioration (PSD) Program under the Clean Air Act (CAA), and other information requested by the Director. This authorization is made by me in my capacity as authorized signatory for The Dow Chemical Company as defined in 45 C.F.R. 521249.

E. A. Rozas
Division Manager

lh